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EDITORIAL NOTES

STEEL FOR GAS APPLIANCES

SINCE we dealt in last week's "JOURNAL" with the operation of the Steel Distribution Scheme in so far as it affected the Gas Industry, the position of manufacturers of gas appliances for the home trade has been still further clarified. So far as the steel requirements for gas-works plant are concerned it has been clear from the start of the scheme that application had to be made, through the gas undertaking, to the Director of Gas Administration at the Board of Trade, to whose Department has been allotted the Symbol "B.T.1," but there remained some doubt as to the right channel through which makers of appliances should make application for their requirements. As recently as last week the general impression was that they had to go to the Iron and Steel Control, who would be guided by the appropriate department of the Board of Trade in deciding their allocations. It has now been officially stated that these requirements should be met out of the allocation made under Symbol "B.T.1," and that the application in future should be made on the "B.T.1" form, not through a gas undertaking in this case, but direct to the Director of Gas Administration, Board of Trade, 26, Chapter Street, London, S.W. 1. We understand that this arrangement applies to every type of appliance except the wartime street lighting units, in respect of which the Ministry of Home Security has a special and separate priority allocation.

FOOD EDUCATION CAMPAIGN

As is well known, the Gas Industry lent its aid wholeheartedly to the Government at the time of the launching of the National Food Campaign early last month. We gave details in the "JOURNAL" of April 3 of the plans made by the British Commercial Gas Association and the future work envisaged, so there is no need for us to refer to them again here. But it is good to be able to record, after only a few weeks' experience of the campaign, which is gaining impetus daily and becoming more widespread and comprehensive, that the Gas Industry's efforts—by no means small—have been eminently successful in more ways than one. The activities of the B.C.G.A. have met with ready response and backing from gas undertakings throughout the country, and never before in the Association's history has there been such a demand from gas undertakings for literature specially prepared in connexion with the Campaign. The Ministry of Food, the Board of Education, the Ministry of Information—all are working together, each in its particular sphere, in this important scheme and already these Government Departments must have had a clearer picture than ever before of the vast importance of gas as a cooking medium to the British housewife and of its almost universal use for the purpose. The Gas Industry is collaborating to the best of its ability with these Departments, and we have good reason to know that its services in this respect have been and are keenly appreciated.

There has been a growing demand for demonstrators, and wherever demonstrations have been given and advice on diet and cooking offered the attendances have been thoroughly satisfactory—better, in fact, than the most sanguine anticipated. Penetration has been had into the rural areas, though it is hoped to do much more in this direction; and at all the demonstrations general information given on rationing and Government measures, as apart from specific information on the most efficient and economical methods of preparing nutritive dishes by gas, has been widely appreciated. The goodwill built up by gas undertakings has been maintained and added to, and new goodwill in fresh places has been established.

The work will go on and will bring a measure of prestige to the Industry, and we are glad that plans are afoot for further linking up of endeavour with local papers and local stores to give the Campaign added drive. And when we say there is a growing demand for demonstrators it is only fitting that some tribute should be paid to the generous way in which those appliance firms which have trained demonstrators on their staffs have put their weight into the Industry's collaborative effort. These manufacturers of gas-using equipment have given great service to undertakings by offering the assistance of their demonstrators. In a word, in regard to the National Food Campaign the signs are full of promise and encouragement as far as the Gas Industry is concerned.

GOOD WORK AT MALTON

"LOOK after your lighting consumers and you are going a long way to keeping your cooking and heating business." This is quoted from a Paper by Mr. T. Law, of Malton, to the North of England Gas Managers' Association in May of 1931. This month, as President of the Association, Mr. Law gave his Address. It is published in full in our issue to-day, and it will be seen that the Author has not wavered from this policy and other policies which he expounded in his Paper given nine years ago, and that his constancy of outlook has brought its due reward. As example, he mentioned in his Address that in the two towns supplied by his Company, Malton and Norton, about 300 houses have been built during the past six or seven years to displace old property. In *every* case he has been successful in installing gas for lighting and in the majority of cases for cooking—and the two Councils concerned have paid a fair share towards the capital cost. Note, too, Mr. Law's pertinacity in regard to the public lighting load. From 1905 to 1933 Malton was lighted by electricity. Was Mr. Law dismayed? In 1933 tenders were invited for lighting the town. His Company won the day for gas lighting with a five-year contract. Last year a contract was entered into for another five years—a result following the satisfaction given by a well-maintained gas lighting service. September last saw the extinction of public lamps, but Mr. Law did not delay in installing conversion units for wartime lighting, which convenience is much appreciated and has brought added goodwill to the gas undertaking. These lamps, by the way, are left burning continuously.

In 1931 Mr. Law had something to say about the coke market and the influence of coke as a revenue earner. He spoke at that time of demand exceeding supply, of how he had had occasion during some winters to ration coke, in spite of buying additional quantities from neighbouring gas-works. At the time we suggested that there was a moral to be drawn from the practice at Malton to make good coke and sell it to individual requirements. That moral is still to be drawn from his present Address. To-day the "happy position" remains of having a ready market for all the coke his undertaking manufactures, and he has to be careful in building up stocks to supply winter demand. The view expressed in the Address that it is up to every gas engineer to make the British public more coke-minded is one which we have put forward time and time again in these columns. The importance of doing so will not be diminished when the war comes to a conclusion. There is a great field for properly prepared coke in the home, in industry, and in agriculture. A fortnight ago we referred to the increasing interest which is being taken in the drying of crops, a system which, of course, assumes great importance in wartime. For the most part the area served by the Malton Company is agricultural, and there should in the district be a further outlet for coke as a fuel for drying plants, for which purpose it has shown itself to be exceptionally well suited.

The Malton Company is not a large undertaking. It is obvious, however, that it is well managed throughout on up-to-date lines, and has been so managed for many years. The aim has been individual attention to and close contact with the consumer, and all modern facilities by way of showrooms, and so on, have been provided. Mr. Law had a good story to unfold at the North of England meeting.

SALARIES

ANOTHER point touched upon by Mr. Law in his Address was the question of salaries. "We are all happy to know," he remarked, "that the question of adequate salaries to gas officials is being considered." The matter has, in fact, been "under consideration" for many years, and every now and then attention is focussed strongly on a problem which, of course, is of first concern to all gas engineers and managers. Admitting that the problem is complex, something should be done to ensure that a gas engineer receives adequate remuneration in keeping with his responsibilities—and, equally important, the salaries and prospects offered to new entrants to the Industry, who have spent years in training, at no little expense, to equip themselves technically and otherwise, should be such as to induce the confidence and enthusiasm of the right type of man. The Industry does need men of high ability, and such men are not to be had for nothing.

We have said that the fixing of a scale of salaries for gas engineers and managers is not an easy problem. Yet it should not be beyond the wit of man to arrive at some arrangement whereby a reasonable salary commensurate with the responsibilities involved is assured. Many offers appearing in advertisements to-day, as ever, fall far short of what is required and show a lamentable lack of understanding on the part of those responsible for the appointments advertised. To base a scale of salaries on volume of gas output cannot, of course, be regarded as sound. Nor can a scheme based on gaseous thermal output be looked upon as anything other than a very rough guide; it cannot in the least be regarded as a true criterion. Other factors come into play. Take, for instance, the amount and nature of plant and processes operated on the works, some maybe, such as gas drying plant and sulphur extraction plant, for better service on the district. Again, the methods by which by-products are dealt with must enter the picture in any assessment. Some works may send their products as crudes to be treated elsewhere; at other works the working-up of crude products into refined materials may be practised, which naturally imposes on the gas engineer added responsibilities which should be taken into account when attempting to arrive at what salary he should rightly expect. These are only a few of the complications which at once spring to the mind, but while realizing the difficulties in the path of formulating what would appear to be a true and fairly accurate scale we see—as indeed we have for long seen—the need for fostering a fuller understanding among those responsible for appointments of the work expected of a gas engineer, of the many and varied duties entailed in this work, and of the cardinal fact that a capable man paid commensurately with his training and ability is a paying proposition to any gas undertaking. He is also helping to make easier the path of progress of the Gas Industry as a whole.

NOW AND THE FUTURE

COME what may, we like the note of confidence which strikes through the Paper by Mr. H. D. Madden to the Wales and Monmouthshire Association of Gas Engineers and Managers. It is published in to-day's "JOURNAL." The British Gas Industry had a good record in the last War, which caught the Industry, comparatively speaking, unprepared, and at its close left it, as Mr. Madden observes, "with a list of deferred renewals and urgent extension requirements that were appalling." The last War awakened the Industry to great efforts and wrought fundamental changes in gas-making practice which in post-war years, coupled with better distribution and sales methods and an appreciation of the value of research, laid the foundations of the progress which since 1920 has been achieved.

With such a proud record and benefiting from past experience we should, remarks Mr. Madden, "face the future with a strengthened knowledge and resolution." It is resolution that we need to-day. The Government has called upon the Industry for every ounce of benzole and toluole it can produce. It realizes the vital part which the Industry can play in this unparalleled war effort. The Industry must, and, we are sure, will, respond to the call. It has been reliably estimated that a further 12 million gallons of benzole could reasonably be recovered by the installation of recovery plants at those gas-works which do not at present recover benzole, and by increasing the efficiency of existing recovery plants. This, as we have emphasized to the best of our ability, is a time for benzole and toluole extraction. It is certainly no time for quibbling, for polemics, for peace-time discussions centred around "Will it pay?" The Gas Industry's endeavours to help the nation in this direction will be watched keenly enough, and the Industry *as a whole* must not be found wanting. We think we are right in saying that so far the effort of the Industry—again *as a whole*—has not been conspicuously brilliant in this war. Many undertakings have done splendid work since Sept. 3, 1939. Some have attended to the problem rather patchily. Others (with peacetime reasons, no doubt, for not recovering benzole) have not only been indifferent but in the early stages, at any rate, positively antagonistic. This attitude in a time like the present is bewildering. Lethargy in the matter is indefensible. We must recover from not too good a start.

In 1919, "deferred renewals and urgent extension requirements that were appalling." At the end of this war the nation will need a strong and effective Gas Industry. No one can with equanimity contemplate a worn-out Industry. The Government departments responsible for the supply of raw materials for plant maintenance and renewal will, we hope, interpret sympathetically and generously the Industry's reasonable requirements. At the same time much can be done in small ways towards prolonging the life of plant and of structural work generally. Vigilance on the works, attention to detail—more difficult now than pre-war, we appreciate—is likely to save large sums in reconstruction; and we are glad to note that this point was not overlooked in Mr. Madden's compact, quiet, and in a manner reassuring Address.

THE INSTITUTION PROGRAMME

ATTACHED to the preliminary programme arranged for the Institution meeting on June 4 and 5 in London is a note to the effect that in view of the developments in the international situation it may be necessary to curtail the programme materially or even to postpone the entire meeting. Naturally we hope that neither course will have to be taken, for gas engineers throughout the country must have been looking forward to meeting their colleagues in a national as distinct from district way, in discussing common difficulties and problems and their solution, and supporting the President, Mr. George Dixon.

The programme planned—we give particulars later in the "JOURNAL,"—is a wartime one. The venue is, as customary, The Institution of Civil Engineers. There are no visits to works and no excursions, but with optimism and no little confidence it has been decided to hold the Reception and Dance at Grosvenor House on the night of Tuesday, June 4. Three business sessions have been arranged, the third terminating at noon on June 5. On Tuesday morning the Presidential Address will be followed by presentation and discussion of a Paper by Mr. T. R. Cook on the new works of the Blackpool Gas Department. At the afternoon session there will be a Paper by Mr. D. M. Henshaw and Mr. C. Cooper on the economics of by-products recovery, which subject at the present time is of more than ordinary importance. On the Wednesday morning there are two Papers, one by Mr. J. T. Haynes, on "Gas Meters," the other, and final contribution at the meeting, by Mr. H. H. Thomas and Mr. P. J. Askey on the

production of reactive gas coke by alkali activation. Both Authors—Mr. Thomas is Chief Chemist to the Liverpool Gas Company, and Mr. Askey is of Imperial Chemical Industries (Alkali), Ltd.—have devoted over a number of years close attention to this subject, and the previous results of their investigations have been published in the "JOURNAL." Again at the present time this communication will be of added interest.

The programme is, as it should be, a light one. We trust that circumstances between now and June 4 will permit of the meeting taking place, for we feel that it will give expression to the confident spirit which prevails in the Gas Industry and that the discussions at the business sessions and the informal talks among members between-whiles will prove of help and encouragement at this critical period.

As we go to press with to-day's Journal we learn that, due to the present international situation, it has been decided to postpone for the time being the Institution Meeting in its entirety. Members of the Institution will receive notice to this effect from the Secretary, Dr. W. T. K. Braunholtz, in due course.

Basic Petrol Ration

We have commented in these columns on the question of basic petrol rations when lorries and other motor vehicles have been converted from petrol to gas. In March last, following upon efforts of the National Gas Council to obtain concessions in regard to the retention of the basic petrol ration in such circumstances, the Ministry of Transport conceded that for vehicles converted to gas propulsion this should be half the normal ration. The Mines Department has now stated that vehicles which carry a gas supply will continue to receive the full monthly basic petrol ration. This should further encourage the use of gas for motor transport.

Aluminium Paint and Fire Hazard

On a later page we reproduce a Safety Circular issued by the Association of British Chemical Manufacturers relating to aluminium paint as a fire hazard. It contains an interim report following an investigation carried out at the Safety in Mines Research Board Laboratories, under the direction of the late Professor R. V. Wheeler. The report, which has received the attention of the Gas-Works Safety Rules Committee of The Institution of Gas Engineers, states that aluminium paint in some circumstances must be considered as a potential danger in the presence of inflammable mixtures of air and combustible gases or vapours. Aluminium paint, it is remarked, may, under certain conditions, give rise to sparks when lightly struck with a metal implement of steel, copper, bronze, or brass, though sparks do not seem to be formed unless the film of paint has first shrunk and cracked. Also, sparks are formed only if the steel was rusty before the paint was applied. "After some time, however, it is possible that rusting may take place under the cracked paint film and so give rise ultimately to a dangerous state. The sparks so produced will ignite explosive atmospheres of coal gas and air and of methane and air." Care should, therefore, be taken in using aluminium paint on iron and steel pipework or surfaces in places where inflammable vapours are present.

Gas and Gadgets

Under this title the *Radio Times* of May 10 devoted a column of its weekly feature, "News for Women Readers," to useful publicity for gas. The writer described a visit to a large gas company where she saw cookers being tested. The exhaustive methods of testing a modern gas cooker and its component parts —involving months of careful work before the appliance is passed as fit for use—were outlined in a readily understandable manner; and the final test of the cooker with every kind of food, prepared in every possible way and under all conditions, was referred to as an indication of the resultant reliability and efficiency of the appliance. The writer also gave a boost to the enamelled gas "cooking-cabinet," which, she observed, is more economical and reliable than a haybox. With its capacity to simmer food all day or keep it hot indefinitely for the late worker, she characterized it as a useful addition to the household in these uncertain days. The *Radio Times*, we believe, is one of the widest read periodicals in the kingdom, and such observations as these should do much to enhance the prestige of the Gas Industry among the women of the country—each of whom, it is remarked, cooks about one thousand meals in a year.

Institution of Gas Engineers

Programme of Annual Meeting

The following programme was arranged for the 77th Annual General Meeting of The Institution of Gas Engineers, which was to have been held at the Institution of Civil Engineers, Great George Street, S.W.1, on June 4 and 5, under the Presidency of Mr. George Dixon, of Nottingham.

As announced in the opposite column the meeting has been postponed for the time being.

TUESDAY, JUNE 4.

10 a.m.	Opening of the 77th Annual General Meeting at the Institution of Civil Engineers. Adoption of Annual Report and Accounts. (*Communication No.* 228) Scrutineers' Reports of the Ballots. Presentation of Medals.
10.25 a.m.	Presidential Address by George Dixon, B.Eng., M.Inst.C.E., Engineer and Manager, City of Nottingham Gas Department. (*Communication No.* 229)
11 a.m. to 12 noon	Presentation and Discussion of Paper on "The New Gas-Works of the Blackpool Corporation Gas Department," by T. R. Cook, Engineer and Manager, Blackpool Corporation Gas Department. (*Communication No.* 230)
12.15 p.m.	Photograph of Meeting on the Horse Guards Parade, St. James's Park, London, S.W.1.
12.45 p.m.	President's Luncheon in the Ballroom of the Savoy Hotel, Victoria Embankment, London, W.C.2.
3 p.m.	Presentation and Discussion of Paper on "Some Observations on the Economics of By-Products Recovery on Gas-Works," by D. M. Henshaw, M.Inst.Gas E., Managing Director, and C. Cooper, M.Sc., M.Inst.Gas E., Chief of Technical Staff, W. C. Holmes & Co., Ltd. (*Communication No.* 231)
9 p.m. to 2 a.m.	Reception and Dance in the Great Room of Grosvenor House Park Lane, London, W.1.

WEDNESDAY, JUNE 5.

9.30 a.m.	General Meeting of Contributors to the Benevolent Fund.
10 a.m.	Presentation and Discussion of Paper on "Gas Meters," by John T. Haynes, Assoc.M.Inst.C.E., M.Inst.Gas E., Director, Parkinson & Cowan (Gas Meters), Ltd. (*Communication No.* 232)
11 a.m.	Presentation and Discussion of Paper on "The Production of Reactive Gas Coke by Alkali Activation," by H. H. Thomas, B.Sc., M.Inst.Gas E., Chief Chemist, Liverpool Gas Company, and P. J. Askey, B.A., Imperial Chemical Industries (Alkali), Ltd., Northwich. (*Communication No.* 233)
12 noon	Concluding Business of Meeting.
12.45 p.m.	Council Luncheon to the President in the River Room of the Savoy Hotel, Victoria Embankment, London, W.C.2.

Forthcoming Engagements

May

23.—B.C.G.A.—Meeting of Members in South-Western District, Imperial Hotel, Exeter, 2.30 p.m.

23.—Wales and Mon. Association.—Annual Meeting at Grand Pavilion Hotel, Porthcawl.

24.—B.C.G.A.—Meeting of Members in Yorkshire District, Great Northern Hotel, Leeds, 2 p.m.

24.—Gas Research Board.—Methane Panel, 11.30 a.m.; Joint Committee on Complete Gasification under Pressure, 2.30 p.m.

25.—Midland Juniors.—Visit to Chatterley-Whitfield Collieries.

25.—Yorkshire Junior Association.—Meeting at Leeds. Paper by A. E. Wilson (Huddersfield), "Town Gas in Foundry Practice."

30.—B.C.G.A.—Meeting of Members in South Wales District, Gas Offices, Cardiff, 2.45 p.m.

June.

1.—London and Southern Juniors.—Visit to Tottenham Gas-Works.

5.—N.G.C.—Annual General Meeting, May Fair Hotel, Berkeley Street, W.1, 2.30 p.m.

5.—S.B.G.I.—Annual Meeting, Grosvenor Hotel, Victoria, S.W.1, 2.30 p.m.

5.—Federation of Gas Employers.—Annual General Meeting, May Fair Hotel, 3.15 p.m.

5.—N.G.C.—Annual General Meeting, May Fair Hotel, Berkeley Street, W.1, 2.30 p.m., followed by Special General Meeting.

5.—S.B.G.I.—Annual Meeting, Grosvenor Hotel, Victoria, S.W.1, 2.30 p.m.; Gas and Coke Oven Industries Export Group General Meeting, 3 p.m.; Gas and Coke Making Equipment Export Sub-Group General Meeting, 3.15 p.m.

15.—Western Juniors.—Meeting at Taunton. Paper by K. G. Eccleshare.

18.—B.C.G.A.—Meeting of Executive Committee, 10 a.m.

18.—I.G.E.—Gas Education Executive Committee, 2 p.m.

Eastern Counties Association

Owing to the latest developments in the international situation, it has been found necessary to cancel the Spring Meeting of the Eastern Counties Gas Engineers' and Managers' Association, arranged for to-morrow at Norwich.

Personal

Mr. L. W. DALBY has taken up his new duties as Manager of the City of Waterford Gas Company.

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Mr. THOMAS R. EVANS, Managing Secretary of the Cefn Mawr and Rhosymedre Gas Company, has been appointed a Director of the Company.

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To mark the departure from Swansea of Mr. F. Stuart Johns, representatives of all sections of the Swansea Gas Light Company assembled at a dinner held at the Mackworth Hotel. Mr. Johns leaves Swansea after an association with the Swansea Gas Light Company extending over eleven years, to take up the appointment of Assistant Engineer and Manager with the Wellington (Salop) Gas Company (a subsidiary of the Severn Valley Gas Corporation).

On behalf of the staff, Mr. A. H. Shepherd presented Mr. Johns with an inscribed silver cigarette case, and on behalf of Morriston Works employees, Mr. J. A. Cunniffe handed Mr. Johns a fountain pen. The esteem in which Mr. Johns is held was evidenced in a number of short speeches, culminating with a brief recital of his career and an expression of thanks to all, made by his father, Mr. W. H. Johns, the Company's Engineer and Manager.

Obituary

The death has taken place at his home at Sheffield, of Mr. JOHN JOSEPH MERRELL, aged 68, who was formerly Gas and Water Engineer at Sutton-in-Ashfield.

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The death has occurred in hospital at Cardiff of Mr. DANIEL CONNOR LYSAGHT, of Chepstow, Mon., Managing Director of John Lysaght, Ltd., of Newport, and a Director of Joseph Sankey & Sons, Ltd. He was 71.

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The death occurred at his home at Pitsford, Northampton, on May 18, of Mr. FREDERICK BOSTOCK, a Director of the Northampton Gaslight Company since 1897, and Chairman since 1918. He was 80 years of age.

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Mr. R. MCCONKEY, London Coal Representative of the Stanton Ironworks, Ltd., for the past twelve years, died on Thursday last. He had been in indifferent health for the last month or so. The funeral took place at Highgate Cemetery on Monday.

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The death occurred on May 12, at the age of 65, of Mr. GEORGE SPALDIN, Assistant Secretary to the Hartlepool Gas and Water Company, in whose service he had worked for over half-a-century.

Mr. Spaldin was held in just regard as a conscientious official and a friend of everyone in the Company; it was his proud claim that up to a short time ago he knew every employee by his Christian name. A member of the Stranton Lodge of Freemasons, he was well known outside his professional sphere. In his younger days he was connected with West Hartlepool R.F.C., and was Assistant Secretary of the Durham County Rugby Union. For some time he was also Field Secretary of Hartlepools United. He leaves a widow, a son (Mr. G. D. Spaldin, Registrar to the Hartlepool Gas and Water Company), and two married daughters.

Glasgow Coke Oven Gas Contract

A controversy which has continued intermittently for ten years would appear to have been brought to an end by the recommendation of a special Sub-Committee of the Glasgow Corporation on May 15 that a supply of coke oven gas for the city be accepted from Messrs. William Dixon, Ltd.

The recommendation of the Sub-Committee followed quickly upon a decision by the Socialist group that the offer of Messrs. Dixon be accepted, and as the Progressive Party have on numerous occasions pleaded for the taking of supplies of gas from this source the way now seems clear for obtaining the consent of the Corporation at an early date.

The Engineer and General Manager of the Gas Department (Mr. J. W. McLusky) advised acceptance of the offer by Messrs. Dixon when it was renewed at the end of last year. In the course of his report he stated that by taking coke oven gas in the quantity and at the price quoted for a few years the Gas Department would be enabled to maintain supplies through a very uncertain and difficult period and in the most economical manner.

The draft agreement provides for a three-years' contract, with two months' notice in summer and four months' notice in winter. The amount of gas to be supplied per week is 28 million cu.ft. at a charge of 6d. per 1,000 cu.ft. unpurified. The present output capacity of the Glasgow Gas Department is 32 million cu.ft. a day, and it is estimated that next winter the maximum daily demand will be in the region of 40 millions.

The Gas Committee on May 17 approved, by 10 votes to 2, the Sub-Committee's recommendation that the Corporation should accept the offer of Messrs. William Dixon, Ltd. To carry the supply a main costing £13,000 will have to be constructed from Govan Iron Works to the Tradeston Gas-Works.

NEWS OF THE WEEK

The Gas Committee of Chesterfield Town Council have accepted the tender of Robert Dempster & Sons, Ltd., for the supply and erection of three catchbox purifiers at the Corporation Gas-Works, and the tenders of G. F. Kirk, Ltd., of Chesterfield, for the supply and construction of concrete foundations for the purifiers.

The Transactions of the nine senior Associations of Gas Engineers and Managers, covering the year 1939, is now available from Walter King, Ltd., 11, Bolt Court, Fleet Street, E.C.4, price 12s. 3d. Running to 430 pages, the volume is fully indexed and includes lists of Officers and Committees of the various Associations.

Eastern Angus Producers, Ltd., has been formed as a private company to carry on at Brothock Bridge, Arbroath, the business of agents for, manufacturers of, and dealers in apparatus designed for producing gas for driving mechanical vehicles, &c. The nominal capital is £100 in 2s. shares, and the Director is Mr. James Wilson Nicol, of Carnoustie.

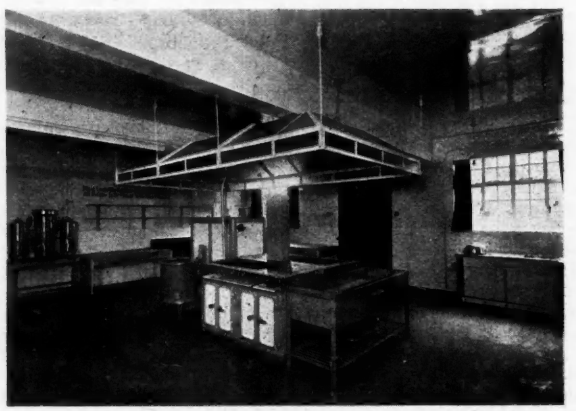
The Gas-Works are to be Closed Down at Tow Law it has been decided by the local Urban District Council. Mr. T. R. Brown, the Surveyor, in a report to the Council, said the works might continue to produce gas for another 12 months, but he would not like to face another winter with the works as they were at present. New plant would cost about £4,000, apart from the cost of a new site and other incidentals.

The Wool Control announces a scheme of preference of raw material supply for the manufacture of uniform clothing, hosiery, and knit goods of wool for certain public services other than those for whose needs special provision is already made. The scheme is designed to benefit various services including municipal corporations, tramway and omnibus companies, hospitals and asylums, gas and electricity undertakings, schools, and public institutions of various kinds.

Ration-time Cookery Demonstrations were recently held by the Bournemouth Gas and Water Company in the Gas Showrooms at Poole and Wimborne, in collaboration with the Parkinson Stove Company, Ltd. A series of lectures based on attractive and nourishing wartime menues were given by Dorothy Scott, Diplomee, N.S.T.S., of the Parkinson Stove Company, and the audiences showed very great interest. They were also very appreciative of the valuable assistance given in solving their wartime catering problems.

Some Close Finishes were seen when the finals of the Indoor Games were concluded at the Recreation Club of the Cambridge University and Town Gas Light Company. The Hunter Rioch Cup was retained by Mr. Frank Woollard, who successfully defended his title as the club darts champion. The donor of the Trophy, who is the General Manager of the Company and a Vice-President of the Club, made the presentation, and distributed the other prizes, following which an excellent smoking concert brought the proceedings to a close.

More than 1,300 People attended a week's series of lectures and demonstrations of wartime foods recently concluded at Jersey. The demonstrations, which were held in connexion with the Ministry of Food National Campaign, were given by Miss G. C. Hearn, B.Sc., of the Radiation Research Kitchen, by arrangement with Fletcher Russell & Co., Ltd., of Warrington. Speeches at the opening session were made by Jurat P. E. Bree, Lieutenant-Bailiff of the Island of Jersey and President of the Education Committee, Jurat E. P. le Masurier, President of the Island Defence Committee, and Dr. R. N. McKinstry, Medical Officer of Health. Members of the Public Health and Agricultural Committees and prominent educational and social workers were also present.



This kitchen is entirely dependent on gas and is incorporated in the Altrincham Borough Council's new civic centre. It is capable of providing hot meals for 350 persons at one time. The reinforced glass canopy over the apparatus was made in their own workshops by the Altrincham Gas Company

Gas and Coke Oven Industries Export Group

The Board of Trade on the advice of the Export Council have now approved the formation of the two following sub-groups.

Gas and Coke Making Equipment Export Sub-Group—Chairman, Mr. R. B. Potter; Secretary, Mr. M. W. Burt.

Gas Meter Makers' Export Sub-Group—Chairman, Col. W. R. Glover; Secretary, Mr. D. S. Glover.

All firms desirous of obtaining raw materials to meet their export requirements must send particulars of these requirements to Mr. M. W. Burt, Secretary, Gas and Coke Oven Industries Export Group, Uplands, Epsom Road, Guildford. It will only be possible in connexion with export business to make provision for supplies of steel for the quarter commencing July 1, 1940, in respect of returns received not later than Saturday, May 25.

Mental Home Gas Installation

There was an error in the fifth paragraph of the article on "Gas Installation at Mental Home," in last week's "JOURNAL," taken from a descriptive brochure. The gas-fired boiler installed in the laundry at the Stallington Hall mental colony, near Stoke-on-Trent, was supplied by Controlled Flame Boilers, Ltd., of Parsons Green, London, S.W.6. It is a boiler of the 9HS type with a steam capacity of 3,000 lb. per hour and is provided with full patented thermostatic equipment.

The boiler works at a pressure of 80 lb. per sq.in., and is fed by an automatically controlled steam-driven pump. The equipment includes a low water alarm and an automatic gas cut-out in case of low water.

Food and Fitness

The Women's Gas Council had a stall of literature and co-operated in the arranging of cookery demonstrations at a two-day exhibition organized by the National Council of Women of Great Britain, held by courtesy of the Council of the Institute at the Royal Institute of Public Health and Hygiene.

Mrs. Walter Elliot opened the Exhibition, and among interesting demonstrations and talks was one on "Breakfasts and Suppers for the Busy Woman," arranged by the Women's Gas Council in collaboration with the Canned Foods Advisory Bureau.

Miss Elsie and Miss Doris Waters (Gert and Dais) performed the official re-opening on Thursday, May 16. This ceremony was followed by a demonstration "Luncheon Dishes for Rationed Days," arranged by the Women's Gas Council. Miss Elsie and Miss Doris Waters watched this demonstration and visited the literature stall of the Women's Gas Council, where Mrs. Long and Miss Thompson, members of the Bow Branch, who were in charge of the stall, were introduced to them. They accepted copies of *Fanfare* and the series of leaflets "I Pass This On To You." Miss Elsie Waters picked up a copy of "A Kitchen Goes To War," and said, "I will show you a good recipe here; we tried it for supper last night," and turned to a recipe for "Eggs and Shrimps with Cheese Sauce" contributed by Lady Bird.

Mrs. C. E. R. Abbott, a member of the Executive Committee, kindly took charge of the Literature Stall while Miss A. M. S. Wilson was out of London lecturing. Members from the London Branches of the W.G.C. took turns to staff the stall, selling literature and explaining the work of the Council to visitors. The Exhibition was well attended and aroused much interest.

This attractive stand was arranged by the Alliance and Dublin Consumers' Gas Company at the Spring Show of the Royal Dublin Society. One of the principal features of the display was the mining scene to the right of the stand, in which actual coal and planned perspective created a realistic impression

Aluminium Paint as a Fire Hazard

In Safety Circular No. 89 (issued by the Association of British Chemical Manufacturers) attention was drawn to the fact that under certain conditions sparks can be produced by striking with a metal implement of steel, copper, bronze, or brass, on steam pipes and steam-heated vessels that have been treated with aluminium paint. It was questioned in correspondence in the Press (*Quarterly Safety Summary* 1939, **10** (39), 37) whether aluminium paint, even if it does cause such sparks, can materially increase the danger of ignition of any inflammable vapours that may be present. It seemed possible that the sparks might, from their brightness, seem more intense than they really were and that they might not, in fact, be capable of igniting inflammable vapours. In view of this conflict of opinions and the obvious importance of the matter, the Association suggested to the Chief Inspector of Factories that the question was worth investigation by some competent official authority. The Chief Inspector arranged such an investigation to be carried out at the Safety in Mines Research Board Laboratories, Sheffield, under the direction of the late Professor R. V. Wheeler. The work has not yet been finished, but the following interim report has been furnished:

"The enquiry is not yet finished, but the results already obtained show that aluminium paint in some conditions must be considered as a potential danger in the presence of inflammable mixtures of air and combustible gases or vapours. It has been considered desirable to publish these results at once, rather than wait until the enquiry has been completed, in view of the wide use of aluminium paint in oil refineries, benzole still houses, and the like.

Briefly summarized, the facts already proved are as follows:

(1) Aluminium paint on steel may, in certain conditions, give rise to sparks when lightly struck with a metal implement of steel, copper, bronze, or brass.

(2) Sparks do not seem to be formed unless the film of paint has first shrunk and cracked. If the film shrinks and cracks in the cold, sparks can be obtained, even though the painted steel has not been heated since it was painted. If the film not does not shrink and crack in the cold, as, for example, a linseed oil film does not, sparks cannot be obtained until the metal has been heated and the film cracked. But, after the film has once been so cracked, sparks can be produced by striking the steel even when cold.

(3) Sparks are formed only if the steel was rusty before the paint was applied. If the steel was clean when the paint was applied, sparks do not seem to be formed, even after the steel has been heated. After some time, however, it is possible that rusting may take place under the cracked paint film and so give rise ultimately to a dangerous state.

(4) *The sparks so produced will ignite explosive atmospheres of coal gas and air, and of methane and air.* It is possible, therefore, that they will ignite explosive mixtures of any other inflammable gases or vapours and air, and may possibly ignite inflammable mixtures of dust and air."

The important point is that it is now definitely established that sparks produced in this way *can* ignite inflammable vapours. Care should be taken accordingly in using aluminium paint on iron or steel pipework or surfaces in places where inflammable vapours are present.

Gas in a Clothing Factory

A New Lighting Fitting

The current number of the South Metropolitan Gas Company's Co-partnership Journal describes an interesting new lighting fitting which has been installed in a big clothing factory in Newhams Row, Bermondsey Street, S.E.1.

In 1938 this clothing manufacturer, Mr. Arthur Miller, was introduced to the Company's two-part system of charge, which opened the field for additional business for gas. All the manufacturing processes were already carried out by gas-fired appliances, the remaining scope for gas being the space heating and the lighting. The slow combustion stoves then used for heating have since been replaced by gas radiators.

A discussion with the Works Manager revealed a desire to improve upon the electric system of lighting the sewing machines then in use. As a result of this discussion the South Metropolitan Company were given the opportunity to carry out experiments. A fitting, now known as the "Metro-Sugg" directional spotlight fitting, was designed for this purpose. It was found that a No. 2 "Metro Daylight" mantle produced a surface illumination at the needle of 80 ft. candles, and glare and colour problems were at once eliminated. A comparison of running costs also showed an economy of over 25% in favour of gas.

The quotation submitted for the complete installation of gas both for this purpose and for general lighting in one department was forthwith accepted, and subsequently an installation in a second department was similarly executed. There are now installed in these premises 85 spotlight fittings and over two dozen fittings for general lighting.

Although the chief application of these units has been the lighting of sewing machines, there are numerous other uses, and as a result of these experiments at Mr. Arthur Miller's the Company have been successful in placing over 200 similar fittings in factories on their area of supply.

PUBLIC RELATIONS IN WARTIME

The Contributor of this article has found considerable confusion of thought on the subject of advertising and selling in wartime. His views are well worthy of study by those in doubt.

AT no time in the history of the Gas Industry—indeed, in the history of any branch of commerce and industry—has publicity been of such importance as it is to-day. The word "publicity" is used advisedly, as it would seem to mean more than the objectionable word "propaganda." Countries have been conquered by the use of insidious methods of infiltration into the public mind, and the "Fifth Column" of which we read and hear is an attempt on the part of our enemies to use public relations to suborn the people.

But it is not with such relations that the Gas Industry is concerned; it is in the maintenance of that goodwill which years of hard work has created between the local undertaking and the consumers. This goodwill is something indefinable and unmeasurable; it is a feeling, built upon respect and trust, of what should be a local institution. The public has learned to rely upon the Gas Industry and to trust the advice of its officials in many domestic matters, and it is distinctly regrettable that certain undertakings have gone into a state of coma and even expressed the view that it would be unpatriotic to present the case for gas while the war continues.

This attitude, of course, is indefensible, as every gas engineer making basic war materials knows, but the effect on the public of X who are told by implication that it is wrong to hire-purchase a new gas appliance until the war is over, is incalculable. Manufacturers generally have realized this, and the advertising campaigns appearing in the Press for well-known gas appliances are a tribute to the acumen of the makers.

Agreement between Gas and Electrical Interests

The agreement recently published by a joint committee is welcome, and all men of conscience will honour it, but such an agreement should not be interpreted as meaning that no further effort should be made to further the sale of gas. In fact, this latter point is made quite clear in the text of the document. A speaker at a recent electrical conference has followed this with the statement that "electricity has never believed that goodwill is built on the disparagement of others." It is pleasing to note this, even if in the past there may have been some misapprehension on the point; but certainly it is true. It should be remembered also that there is such a thing as disparagement by implication, and the use of superlatives can be a frequent source of irritation. For instance, such a statement that "electricity (or gas) is cheapest for cooking rationed foods" would be a direct infringement of the agreement, even if the statement was true. At the present time the use of exaggerated claims will certainly defeat their own object, and cause irritation to users of the respective commodities. It is therefore wise to avoid the slightest semblance of "knocking" your competitor.

Domestic advertisements are in the main addressed to women, and it should be remembered that the average woman is a plain straightforward person who wants a plain straightforward statement of fact. She will not trouble to unravel the mysteries of a picture problem, and woe betide those who misrepresent their goods, or are over-optimistic in their claims.

The Gas Industry can tell a wonderful story to-day, and the effect should not be spoiled by over elaboration. A technical man, busily immersed in his daily work, becomes so used to certain terms that he regards them as colloquialisms, and puts them into his advertisements. Actually, the general public understands next to nothing of such phrases as "thermal efficiency," "heat output," &c., and so good money is wasted. On the other hand, there is danger from the skilled advertising practitioner whose layout is sometimes so clever that it obscures the object in view—in this case to sell gas.

The rise in the cost of paper coupled with the shortage of pulp will curtail Press advertising considerably. Newspapers are smaller and will be smaller still, while advertising rates are higher. This need not necessarily reduce the value of a well placed advertisement, for all advertisers will of necessity have to reduce the space they are accustomed to buying, and position will play a greater part in the future. Undertakings sending stories to the Press for editorial use will have to see to it that their matter is "news," because editors will find it necessary in future to discard more than they print. Increased postal charges also play their part in preventing the use of large quantities of literature, but one enterprising undertaking has solved this difficulty in part by printing messages on the back of its letter paper. The use of direct mail is possible at present because of the long term policy of the B.C.G.A. which has bought ahead sufficiently to supply the Industry with a fair quantity of literature. Posters, too, are in preparation at Gas Industry House, and many undertakings will welcome these as being valuable, especially as good terms should be available to local exhibitors.

Food Economy Campaign

At the moment there is a large public thirsting for information on all forms of cookery and food economy, consequent upon rationing. Demonstrations are not new to the Gas Industry, and every effort should be made to further the campaign sponsored by the Minister of Food. Lord Woolton has made a signal success of every project with which his name has been associated, and the operations of the Ministry in connexion with the Food Economy Campaign can be studied with profit. But the point of view of the public must be kept always in the forefront. It is not easy for demonstrators to make their lectures interesting when their raw materials are so restricted, and showmanship should be introduced as an additional aid. This is a time of National Emergency—help on the good work by installing a gramophone and playing the National Anthem at the beginning of each demonstration. Hang up a Union Jack or Allied Flags, arrange competitions for clubs, and above all don't be stereotyped in invitations. The familiar "We have pleasure in notifying you," or "The X Company would be pleased if you could attend," . . . Try a new form of approach, such as—"Toad in the Hole" is on the menu for Monday's demonstration of ration cooking at . . . or "Rabbits are cheap this week, and so we have made up Wednesday's menu for ration cooking at . . . Ask the audience to write in and tell of their experiences with the recipes, and link up the talk with what the Ministry is saying in print, and what the shops are selling.

Probably the only line of approach to the public of all classes left untouched by the exigencies of war is the film. This is the most valuable aid to public relations yet discovered, and if full use has not been made of it in the past, the fault lies solely with the films available. The public require something interesting to hold their attention. The sociological type of film with a "high-brow" commentator has a very limited public, and does not leave a lasting impression, while the instructive type leaves many adults annoyed and bored, albeit schools welcome such films. What is required is a story—a good story—such as could be made with a life of a Murdoch and a little imagination. Action is what the public wants and there is plenty of material where there is money to be spent. The writer's own view is that the publicity film is in a groove and requires an absolutely new technique. But this must perforce wait until after the war.

Co-operation Among Undertakings

With the cessation of the road show service it has become almost impossible for the small undertakings to show films as a separate entity. But why should there not be area co-operation? It is possible to buy quite a competent sound machine for round about £100, and several undertakings working together could quite conceivably give a number of shows for about £2 10s. each. This is recommended for the attention of the B.C.G.A. who are now producing short food films which will be extremely valuable in forwarding the food economy campaign. In this connexion comes news of a new innovation. A Regional Gas Committee has been formed by ten contiguous gas undertakings serving 500,000 consumers. Resources have been pooled and a campaign is appearing in the Press in that area. So far results have been good, and it may well be that the solution of wartime publicity has been found here, as the Press campaign may be followed by the use of films.

The Gas Industry has a part to play which, without being spectacular, is, nevertheless, a valuable one. It would be failing in its duty if it neglected any opportunity to place before the public its cheapness, its flexibility, its vast contribution towards economy in the use of transport, its manifold uses for industry and its huge organization for disseminating the gospel of good feeding. Every gas manager should make constant and full use of the services of the lecturers of the manufacturers and the B.C.G.A. and, above all, should not neglect the school children, for they are the future consumers to whom the Industry must look.

Wartime Cookery by Cannon

In these days rationing and the need for economy guide the housewife in her choice of recipes. The "rich fruit cake" of peacetime, with its "four eggs, half-a-pound of sugar and butter" gives place to the wartime "economical eggless cake," whose ingredients are such that one week's rations need not be used at one fell swoop. Thus cookery has become an even more complicated art, and the housewife has to devise new ways and means to meet the situation.

In response to numerous requests for practical wartime recipes, Cannon Iron Foundries, Ltd., have published a wartime recipe booklet, and the publishers hope that it will be of assistance to housewives in obtaining the utmost value from rationed foods, as well as in suggesting substitute dishes which are both nutritious and economical. The inexpensive recipes which appear in the booklet should be a valuable aid to housewives, and although the "rich fruit cake" may no longer be seen on the table, "soldiers' cherry cake" sounds a very good substitute.

Carbonization with Hydrogen under Pressure

THE Institution of Gas Engineers and F. J. Dent, have been granted a patent (No. 519,246; application date, Oct. 7, 1938) relating to a process for carbonizing coal in which the reaction between coal and hydrogen under pressure is utilized for supplying heat for the carbonization.

The process consists in passing a current of hydrogen under pressure through a mass of coal and initiating reaction between the hydrogen and the coal by local supply of heat close to the place of admission of hydrogen. The effect is to produce near this place a zone of reaction in which the temperature at first rises rapidly. Once the reaction has commenced, the supply of extraneous heat is discontinued or restricted so that after attaining a maximum the temperature in the zone of reaction falls, the fall in temperature being accompanied by cessation of the reaction as above described. Meanwhile, however, heat from the zone of reaction has been conveyed by the current of hydrogen to the coal in the adjacent zone, thereby initiating reaction in this zone. Heat from this zone is then conveyed by the hydrogen to yet a further zone, and so on until the reaction has proceeded throughout the entire mass of coal. Thus the effect may be described as causing a zone of reaction and high temperature to travel through the mass of coal, which is thereby carbonized.

The maximum temperature reached in the zone of reaction depends mainly on the pressure of the hydrogen and is higher the higher the pressure. Preferably there is used a pressure of at least about 25 atmospheres. By appropriate choice of the temperature, pressure, and rate of supply of the hydrogen, the reaction, and hence the quality and yield of the coke, can be controlled. Further control of the reaction is afforded by dilution of the hydrogen with another gas or vapour, such as steam, carbon dioxide, or methane, or by the use of a catalyst for the reaction, such as an alkali. Other conditions being the same, dilution of the hydrogen reduces the maximum temperature reached in the zone of reaction, while the use of a catalyst tends to prolong the reaction in the later stages and thus permits the use of a higher rate of supply and lower temperature of the hydrogen for a given duration of reaction, or, conversely, a more extensive reaction with a given rate of supply and temperature of the hydrogen.

FIG. 1

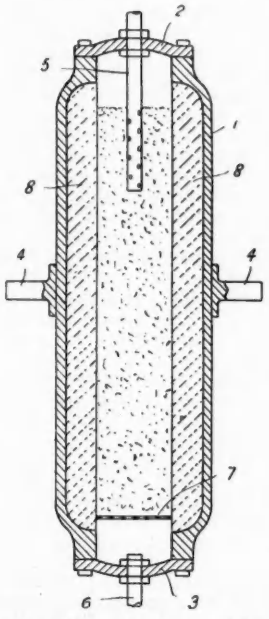
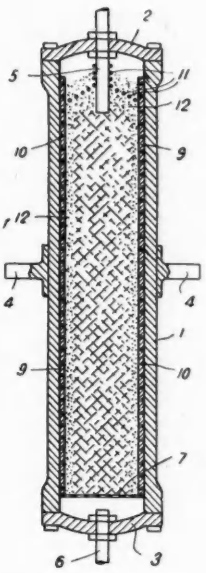


FIG. 2



The local supply of heat required for initiating the reaction may be provided by combustion of a part of the coal in air or oxygen, by electrical heating, or by temporary preheating of the hydrogen, for instance, to about 600° C. or higher. In the latter case, the hydrogen may be preheated by partial combustion in air or oxygen, by heat exchange with hot gases, such as those produced by the process, or by electrical heating; another method of preheating the hydrogen consists in causing a part of the hydrogen to undergo the exothermic reaction with carbon monoxide to produce methane.

Once the reaction has been initiated, it is unnecessary to heat the hydrogen supplied, except for the purpose of controlling the quality and yield of the resulting coke, as above described. In any case, the temperature of the hydrogen supplied must be insufficient to prevent fall in temperature and cessation of reaction after the maximum temperature has been reached in the zone of reaction.

It may be noted that the fusion of the coal during the process does not hinder satisfactory carbonization, so that it is unnecessary to provide for agitation of the coal.

The coke produced by the process is generally of high reactivity and has a finely porous structure and a low sulphur content. Cokes of adequate strength can be obtained from a wider range of coals than by normal carbonization; thus weakly caking coals can be carbonized satisfactorily by the process. The gas produced in the process has a high calorific value. The invention, state the patentees, is applicable to the carbonization of low-temperature semi-cokes.

The accompanying drawings illustrate diagrammatically in vertical cross section two forms of apparatus suitable for carrying out the process of the invention.

The apparatus comprises a cylindrical metal retort adapted to withstand high pressure and closed at its ends by pressure-tight doors 2 and 3, which can be removed for charging and discharging. In order to facilitate these operations the retort may be mounted on trunnions 4. The hydrogenating gas is introduced through an inlet pipe 5 and the gaseous and volatile products are withdrawn through an outlet pipe 6. A grate 7 supports the charge.

The apparatus shown in Fig. 1 has a lining 8 of refractory material and is suitable for the treatment of materials which do not form plastic layers impervious to gas during the hydrogenation.

Materials, such as caking coals, which form plastic layers impervious to gas may conveniently be treated in the following manner in the apparatus shown in Fig. 2. Instead of the refractory lining shown in Fig. 1, the retort 1 has a metallic lining 9 cooled by passage of water through a helical groove 10 cut between the lining and the wall of the retort. Water-cooling pipes 11 are also arranged at the upper part of the retort around the inlet pipe for the hydrogenating gas and between this pipe and the lining. The charge of coal to be treated, suitably subdivided, is screened in order to remove finer grades, say below ¼ in., and in charging it is arranged that these finer grades are around the inner wall of the vessel, the bulk of the charge consisting of the larger grade. Some of the finer grade material is also arranged around the inlet pipe 5, as shown at 12. Owing to this distribution of grades and to the effect of the water-cooling at 10 and 11 impervious plastic zones are formed adjacent to the wall of the lining 9 and at the upper part of the charge during the treatment with the hydrogenating gas, thus preventing "channelling" of the gas along the wall of the lining. The plastic zones formed in the material of larger grade constituting the bulk of the charge are less impervious and the charge remains "open" to the flow of the gas.

The length of the vessel may be about 10-20 ft., and the internal diameter of the annular refractory or water-cooled lining may be about 2-8 ft.

A current of hydrogen or gases containing hydrogen under a pressure of 50 atmospheres is passed through the charge in the retort at a rate of, say, 2,000-2,500 cu.ft. (measured at normal temperature and pressure) per hour per sq.ft. of internal cross-section of the retort. At the commencement of the process, the gas introduced into the retort is pre-heated by electrical heating to about 800° C. When reaction has commenced—say, after about 10 minutes—the preheating is reduced so that the temperature of the gas admitted to the retort is about 500° C. or lower and passage of the gas at this temperature is continued until reaction has ceased.

The results obtainable by the invention are illustrated by the following experimental data, in which volumes of gas are expressed in cubic feet at normal temperature and pressure:

Carbonization of Coal (Warrenhouse).

The hydrogenating gas used was—

(a) hydrogen,

(b) a mixture of 85% of hydrogen and 15% of methane (by volume),

(c) a mixture of 85% of hydrogen and 15% of carbon monoxide (by volume).

In each case the hydrogenating gas was supplied under a pressure of 50 atmospheres and at the rate of 2,500 cu.ft. per hour per sq.ft. of retort cross-section.

	1 (*a*)	1 (*b*)	1 (*c*)
Volume of hydrogenating gas supplied during the process per ton of coal.	62,200 cu. ft.	58,000 cu. ft.	61,000 cu. ft.
Composition of gas produced :—			
CO_2	0.5%	0.6%	1.5%
CO	2.0%	1.8%	12.0%
H_2	74.4%	64.9%	67.5%
CH_4	22.5%	31.8%	18.4%
N_2	0.6%	0.9%	1.1%
Yield of gaseous hydro-carbons per ton of coal.	135 therms	95.6 therms (additional to the methane supplied in the hydrogenating gas).	110 therms
Yield of tar per ton of coal ...	15 gallons	15 gallons	15 gallons
Yield of coke per ton of coal ...	11.5 cwt.	13 cwt.	12.8 cwt.
Rate of travel of reaction zone ...	50 ins. per hour	48 ins. per hour	50 ins. per hour
Temp. attained in the reaction zone.	1150° C.	1030° C.	1080° C.

NORTH OF ENGLAND GAS MANAGERS' ASSOCIATION

Presidential Address

of

T. LAW, Malton

Given at the Annual Meeting at Newcastle on May 3.

I should first of all like to express my sincere thanks to all the members of this Association for electing me as your President. I am fully aware that I am a very humble follower of many men whose names are honoured ones throughout this great Industry of ours, some of whom have occupied the highest position it is possible to hold, that of President of The Institution of Gas Engineers. I am not the first one from Malton to occupy the chair as my predecessor, Mr. Henry Tobey, who I believe was one of the founders of this Association, twice occupied the position during his connection with the Company which I have the honour to serve.

We live in very troublous times, and the Gas Industry, like some others, has to stand its share of the troubles, but I am convinced that we have a commodity to sell which, providing it is handled properly, will overcome all obstacles without any assistance from outside. There is one reservation which I should make to a statement of this kind, and this has relation to coal, to which I will refer later. We have never had any assistance, the reason being that we have never sought it, but this cannot be said of at least one of our most virile competitors, for to reach the success it has gained, it has had to have assistance of some kind from the Government.

Coal

Coal is the life-blood of the Industry, and it is essential, if the public is to have the benefit of cheap gas, that the price of coal does not continue to increase like it has done during the last five years. We shall all agree that man is worthy of his hire, and in the case of coal mining the miner should be paid adequately for his work, and I only hope he is getting his proper share of the 5s. to 7s. increase per ton which is being paid by Gas Undertakings compared with 1935. I feel that the Coal Associations have obstructed the Industry more than they have helped it, for prior to their formation we were quite at liberty to buy our coal where we liked. This is not the case to-day, for besides paying the price which the Associations demand, we are instructed in the choice of coal we shall use.

In my case, I wished to buy 5,500 tons of a certain class of coal as part of a yearly contract, but simply because I had only used 5,000 tons of this coal in the previous year, I was informed by the Colliery concerned that the Coal Association would not permit it to supply more than 5,000 tons. The result was, my Company had to buy 500 tons of a much inferior coal at practically the same price. I wrote to the Coal Association pointing out that the inferior coal should be at least 3s. per ton less, but I was unable to get any satisfaction. I think we shall have to make continual representations about the coal position to the Government, especially with regard to buying suitable coal for gas-making, and then in time we might get some redress. At the same time I presume we cannot do this while we are at war, for if the last war is any criterion, as time goes on and the present war continues, we shall probably be thankful if we are able to get suitable coal for gasmaking at all. If the price of gas has to be increased, it may mean only 1d. or 2d. per week, but this is quite a lot to the poorer consumer, who in many cases has a hard time in making ends meet. Before I leave the position of coal, I should like to express my thanks to the Newcastle and Gateshead Gas Company for appealing against the cost of coal, although one regrets that the appeal was not successful.

Benzole

Much controversy exists—or did exist before the war—as to whether benzole recovery is a paying proposition or not. Some Engineers are of the opinion that it is, while others are not, and until it can be shown that the stripping of gas is really a paying proposition it is not to be wondered at that many Gas Engineers fight shy of installing the necessary plant. Of course, it may come about that the Government may demand that all gas-works making, say, 500,000 therms per year must make benzole. At the present time, with increased costs in coal, labour, materials, &c., no Engineer would embark on the installation of any additional plant (unless absolutely required) if it was not to be remunerative. Since writing the above, the Government has made the request that all Gas-works using 5,000 tons of coal per annum should install Benzole Plants and help in the winning of the war. At the same time it must not be overlooked that if the whole of the coal gas plant is in operation and the make cannot be increased for the extraction of benzole without resort to the use of the Carburetted Water Gas Plant, the profit from benzole may be more than counteracted by the extra cost of making Water Gas due to the good price of coke and the high cost of Gas Oil.

The question of the sale of coke is an important matter for us all, as it is essential that the best price should be obtained for this commodity, if only to keep the price of gas low. I am in the happy position of having a ready market for all my make of coke, and it is most important that I should build up a stock of at least 100 tons during December to enable me to supply all the demands up to the end of March. As I said in a Paper which I read some nine years ago to this Association, I believe it is due to the quality of the coke that the demand generally exceeds the supply shortly after Christmas. I do not believe in stocking coke during the summer months as the wisest policy, to my mind, is to get rid of all the stock if you are in the fortunate position to be able to do so, and start building up a stock in late September or early October to meet the demands of the winter months. Another point which is a factor in selling coke is that gas-works should only buy the best coal for its gas-making and coking qualities, and I am fully convinced from experience that washed fuel meets these requirements. It is up to every Gas Engineer to try to make the British public more "coke-minded," as the time may come, and we all trust very soon, when the war will end and requirements will return to those of peace time necessity. When this should happen, there will be great quantities of coke released on the market, and to meet this eventuality we shall probably have to push on with the sale of domestic coke grates. One feels there is a great potential field for coke grates for small houses if one takes the necessary initiative, as in addition to providing an outlet for our surplus coke, we must not forget that gas for lighting the fire will also be used, and this is by no means negligible.

Tar

The decrease in the price of tar during the last two years is of serious concern to the Industry. This residual, like coke, has its effect on the price of gas, for if tar is yielding a good revenue, then it has a share in keeping the price of gas at an economical figure. On the other hand, if the price is low, and coal continues to increase in price, the only alternative is to increase the price of gas, and this is the last thing that a gas concern wishes to do. One feels that the Government can assist the Industry by specifying that a certain proportion of tar shall be used in road making, spraying, &c. We have a dehydration plant at Malton, and for many years after I first came there we sold practically all our summer make of tar to the two local Councils, but during the last five or six years we have not sold them any at all. I have naturally had a word with the two surveyors about the matter, and they both inform me that bitumen products give better results. This opinion is in direct contrast to that of the British Road Tar Association, which maintains that tar with its adhesive properties make it particularly suitable for applying to all types of road surfaces. I wish we could convince the surveyors in Britain that this is so, as we should then get a price for our tar which would certainly be much better than what we are receiving to-day, for we could hardly receive less when the usefulness of tar is taken into consideration. In this connexion and probably due to the war, the position has improved, but there is still room for further improvement.

We are all happy to know that the question of adequate salaries to gas officials is being considered by The Institution of Gas Engineers. As a Gas Engineer, I feel that you will agree with me that the work does not get any easier, but on the other hand more onerous, and the duties of an Engineer of thirty years ago were very much lighter compared with what they are to-day. A Gas Engineer has a great responsibility and it is only right that he should receive adequate remuneration in keeping with that responsibility. There are some managers of small undertakings who are being paid less than stokers, and we must all agree that this is wrong. One can only trust that when the salaries are finally settled, those gas undertakings which are at present miserably underpaying their staffs will do the proper thing and fall into line with those

which are paying adequate salaries commensurate with the responsibilities of the official concerned.

Benevolent Fund

I should like to support the appeal which the late President of the Institution made for this most useful fund. You all know what the Fund is for, but it is a striking commentary that over 40% of the members of The Institution of Gas Engineers do not subscribe, and I strongly appeal to all members of our own Association to subscribe, if only the minimum amount of 5s., for every little helps. In addition, all subscribing members can help further to augment the funds by signing the covenant which remains in force for seven years, whereby the Institution can reclaim income-tax on the subscriptions, and 7s. 6d. in the £ is rather a large amount. Our esteemed Honorary Secretary will supply any member with information respecting this covenant.

Lighting

I do feel that we do not give sufficient attention to retaining the lighting load, as once the lighting in a house is lost, it is the thin end of the wedge for our competitors to get in with other apparatus. It is no use our pushing the sale of gas for lighting purposes if we have electric light in our own house, and I am a firm believer that all those engaged in the Gas Industry should use gas for all purposes. My own house is lit by gas, and I should be the last person in the world to recommend consumers to install gas fittings if I used electric light. Gas lighting is superior to electric light in many ways, as it is a softer light, and providing the burners are kept clean it does not affect the eyesight, and in addition it ventilates and it warms. In the case of those with limited purses it is much more economical than electric light, for it helps to warm the room during the winter months and thereby saves the cost of fuel, and this saving is as much as 4d. to 6d. per room per week. It is undoubtedly a fact, as it has often been said before, that fewer people would change to electric light if some gas unit could be incorporated in the wireless set whereby the set could be run by gas in the same way as it is now run by electricity. One is aware that there is a separate unit for this purpose, but the cost of this unit is rather prohibitive for some people, and it has the added disadvantage that it is separate from the set. While I am on the subject of lighting, it may interest you to know that in the two towns which we supply, Malton and Norton, about 300 houses have been built during the last six or seven years to displace old and tumbledown property. In every case my Company has been successful in installing gas for lighting and washing and in the majority of cases, for cooking in addition, and I am happy to state that the two Councils have not expected the work to be done for nothing, but have paid, in my opinion, a fair share towards the capital cost.

The public lighting load is one which in the past has not received sufficient attention from the Gas Industry, and only during recent years—since electrical competition has become so severe—have we put forward suggestions for modernizing our gas lighting in an effort to retain the load. It is often a difficult matter to persuade local authorities to modernize their lighting at the expense of the rates, and I am of the opinion that it is the duty of the gas undertakings to place every facility at their disposal so that they might hire-purchase or rent the equipment over long-term periods. We are now fortunately placed in having definite recommendations from the Ministry of Transport's Departmental Committee on Street Lighting, and we are, therefore, able to submit schemes of lighting which conform to these standards and will therefore have Government approval. The load is one which we cannot afford to ignore, as, if properly managed, it is the best publicity our Industry can have. When submitting a new scheme of lighting it is first necessary to make a detailed survey of the district to be lighted, and then to decide what power of lighting is required for each type of road. As a general rule, the main shopping streets and traffic roads should be lighted to Group "A" Standard, the outlying traffic roads to upper class Group "B" Standard, and the residential streets, side roads, &c., to lower-class standard. Having decided upon the type of lamps best suited to the roads in question, and upon the number of lamps that will be required, one has to determine what shall be our basis of charge. I suggest that we have to be guided to a great extent by the competitive terms which are to be expected from the other tenderers. It is obvious that the capital cost of the equipment must be covered over the period of the agreement. Our annual maintenance charge must also cover the cost of wages, renewals, painting, &c., so that the only factor by means of which we can vary our annual cost, is the rate at which we charge for the gas. The practice of attempted profiteering on public lighting has resulted in more lost load than through any other cause. I feel that if we put forward the best designed lamps of pleasing appearance, best suited to the requirements of the district with adequate lumen outputs to meet the Ministry of Transport's recommendations, and also exercise intelligent foresight when compiling our quotation, we shall not only retain, but increase our public lighting load. Our chief difficulty is to overcome the prejudices which have resulted from our being the earliest suppliers of illumination, and if by advertisement, circulation of relevant literature, or better still, demonstration of modern equipment, we can overcome these prejudices, half the battle is won, and the other half rests with the engineer.

From 1905 to 1933 Malton was lighted by electricity, and up to that time not one of us connected with the Gas Company believed that the town would revert to gas. However, in 1933 tenders were invited for lighting the town on a one, three, or five years' contract, and no one was more surprised than I was when I received word that our tender had been accepted. This meant that in six to seven weeks we had to lay the services for 170 lamps, obtain and fix the necessary equipment—and with my limited staff this was no easy job. Fortunately, the weather was kind to us, as we had the longest spell of fine weather I ever remember, and in the end the battle was won and all the lamps were fixed and ready for lighting by the appointed date. Since then we obtained the contract for one year in 1938, and last year we were again favoured with the contract for another five years. We have tried to make the lighting the success it should be, as although all the lamps are clock controlled, the man responsible has to visit each lamp every night to see that it is lighted. I believe this has been appreciated by the members of the Council, as it has done away with any complaints there might have been of the lamps being left unlit, and has made for greater satisfaction. We have recently installed a few conversion units for war-time lighting, and they are quite a success. They greatly help in the black-out, and one need have no fear in recommending them. It may be of interest to mention that we are installing these units at cost and charging 2d. per night per lamp for lighting and maintenance, and the lamps are left burning continually owing to the smallness of the consumption.

Cookers and Apparatus

Although I have mentioned lighting, it is up to us all to push the sale of cookers and other apparatus for all we are worth. We had quite a number of single-cased cookers in use when I came to Malton, and this class of cooker does not do any gas undertaking any good, as besides being inefficient, they are great gas wasters. I do not know how many we have on the district now, but they are very few, if any, and we should concentrate on this side of the business either by hire-purchase or sale outright. We sell most on the three and five years' hire-purchase system, although we have a few in the district on ten years' hire purchase, but my personal opinion is that this latter period is too long. The make and finish of the enamel cooker is improving so rapidly that I do not think consumers will keep a cooker ten years, but after a few years will want to change it for a more up-to-date one, in which case it will probably mean that an undertaking will have quite a lot of the ten-year class of cooker in stock of which it might have difficulty in disposing. A great help to our slot consumers in being able to buy a cooker by the hire-purchase system is that we give rather a big rebate, and I am fully convinced that this has been an incentive to quite a number of consumers to purchase a cooker. I know that if we did not give a rebate our sales of cookers to slot consumers would have been much less than they are to-day, and the rebate also helps in the sale of gas fittings, for it is often that a mantle is bought over the counter and the buyer instructs the attendant to take the payment out of the slot meter.

During the last two years our showrooms have been extended by the taking in of a cottage and brought up to date. It is a truism that advertising pays, and the best advertisement for any gas concern is a good showroom. We have that in Malton, for I feel that it will compare with most showrooms of a similar size in output. We all rather begrudge to spend much money in advertising, but gas, like anything else, has to be sold, and one of our chief duties as gas engineers is to be certain that the best means are employed in letting the public know what gas can do in the shape of lighting, heating, and cooking, and the best means of doing this is by advertisement and demonstration.

It is good to read that Britain is becoming less foggy; we hardly know what fog is in Malton, and gas has helped in this happy state of affairs. Many schemes for dealing with fog in enclosed spaces, such as railway stations, have been tried

out, and it is interesting to know that one of the two best is by gas burners.

It has often been said, and it is still true to-day, that profits are made in the retort house. I know it worries me quite a lot if the make is not what it should be, but there is another important side to the Gas Industry and that is the question of distribution. We should be happy if we could be certain that the quality and pressure remained constant throughout our districts, and while governors help greatly in respect to pressure, the cost of installing them to every meter is rather heavy. At the same time I am fully convinced that distribution will become more and more important, and that it will be the duty of every Undertaking to see that gas is being supplied to every consumer in its most efficient form, and by efficient I mean constant quality and pressure.

Some five years ago the generator of the water gas plant was in a bad condition and it was dangerous for the operator to work it. Enquiries were made for a new one to replace it, but the cost of £1,000, considering that the plant is only used during peak periods, was prohibitive. At the time I got in touch with a firm of welders and requested them to give me a price for welding a new shell outside the old casing. Their price was favourable, and I am glad to state that they made a good job of it and the generator is now good for another few years, in addition to which the cost was only one-fifth of what a new one would have been.

Gasholders

It may interest you to know that prior to having a new gasholder built into an old tank in 1938, the newest gasholder was a matter of over 60 years old. This has recently been examined, and beyond a little pitting on the inside of the sheeting, the metal is in perfect condition. This particular holder will have to have some attention as it is rather out of level, and this is caused chiefly by the inner lift being of the flying type. With regard to the holder of the spiral type which was constructed in 1938, although the one displaced was only of 40,000 cu.ft. capacity, it was surprising the amount of sludge and dirt that had collected in the bottom of the tank. It took some days to clean it out, and some 50 loads were cleared by sludge cart before the tank bottom was perfectly clean. The diameter of the tank is 60 ft., and we have replaced a single-lift holder with a two-lift spiral one of 90,000 cu.ft. capacity, which is slightly more than twice as large as the old one. The contractor who built the tank did a good job, for the bottom of the tank, laid in stone flags, was in excellent condition.

During the very severe frost recently, when the thermometer registered in some parts of Malton 35 degrees below freezing point a thin coating of ice formed inside this holder. This caused the inlet pipe to break off at the bottom during the deflation of the holder with the result that the Works mains were flooded and the gas supply cut off the district for a short time. When the repairs were carried out and a new inlet pipe installed, it was found that neither the inlet nor the outlet pipes were stayed, so I took the opportunity of having this done before the holder was again put into commission. Whether this would have happened to a column guided holder under similar conditions is open to question, but the fact remains it did happen to a spiral holder.

I have refrained from giving a description of the Works, as I did this in a Paper which I read before this Association in 1931. It will be sufficient to say that we are holding our own, and although we cannot show great increases each year like some other undertakings, it must be remembered that the districts we serve are mostly agricultural. The increase in houses built since I came to Malton is about 20%, whereas the increase in gas consumption is much higher than this, despite the greater efficiency of the regulated gas cooker. Omitting business premises, I should say that about 90% of our consumers have gas cookers, and the chief business we do in cookers and have been doing for the last few years, is the replacement of old-fashioned cookers with up-to-date ones. This tends to reduce rather than increase consumption, owing to the higher efficiency of the latter type. We cater for central heating by supplying gas for this purpose at 5d. per therm, and for gas engines and industrial purposes at 7.8d. down to 7d. per therm. When it is remembered that our prices for coal are rather high owing to the distance we are situated from the coal fields, I do not think the prices are out of the way.

It may be of interest to you to quote the following extract from the *Malton Messenger* of Oct. 1, 1887, when Mr. Tobey was the President: "The members of the North of England Gas Managers' Association will have pleasant recollections of their visit to Malton during Mr. Tobey's year of office as President. They will also be aware that the Gas Company supplies excellent gas, and that the streets are lighted in capital style. These things, however, do not satisfy everybody, and during the past months there has been an agitation to have the streets lighted by electricity. The agitation was ridiculous, and that some of its promoters are beginning to see. We think it would be better if they would learn to use properly the blessing they already possess—an excellent supply of gas at a reasonable price."

May we all hope that when the time comes round to hold our next Meeting the war will have ended, and that peace and tranquillity will have been restored, not merely to England and her Empire, but to all nations.

In concluding this address, I should like to bear my testimony to the man who undoubtedly began this great industry, William Murdoch, whose Centenary we celebrated last year.

Vote of Thanks

Mr. J. R. BRADSHAW (Hartlepool), moving a vote of thanks to Mr. Law for his address, said, "It is unfortunate that Mr. Law's year of office should coincide with the outbreak of a second Great War and we sympathize with him in this. In times such as these the engineer and manager of any gas undertaking has sufficient to do with his own local affairs without having to deal with national or district work, and to that extent we are particularly grateful to Mr. Law for the time he has spent on his Address and in the service of the Association; he has not spared himself.

"When the President touches upon the subject of coal, his remarks fall on very appreciative ears. Coal is the life blood of our business; on it depends our very existence. The structure of the great Gas Industry has been built up on a reasonable price for coal, and if that is taken away from us after over a hundred years as a regular and increasingly large customer of the coal industry, then we are shaken to our very foundations. The attitude of the collieries is quite different from our own in that we are willing and anxious not to do anything to restrict the business of our consumers lest by one and the same action we restrict our own. The labourer is worthy of his hire, and no one in his right mind wishes to withhold a reasonable rate of remuneration for the coal miner of all men. At the same time, the collieries and the Government must have some regard to the enormous value of the business which the Gas Industry brings to them and must ever remember that a dead goose never yet laid an egg—much less a golden one.

"At the same time I think we are all inclined to be reasonable with the collieries and the Government in wartime. Their task is a colossal one and the fates were unkind to them in the severe weather experienced in the early months of the year. When one thinks of the enormous tonnage of coal which usually proceeds coastwise and which in the midst of the phenomenally severe weather had to be transferred to the railways it is not surprising that there were serious shortages in the various undertakings in the country. However, the Gas Industry must go on and adequate and special provision must be made for succeeding winters' supplies, if the war should last so long, to the exclusion of all other requirements less necessary to the prosecution of the war.

"This subject is also linked up very closely with the President's remarks on benzole extraction. In some works and with some coals and with some methods of carbonization it is a paying proposition. In others with different coal and different carbonizing methods it is not. It all depends on the local circumstances. In this connexion the letter from the Minister of Mines which we all received the other day is very timely. The Minister here makes a definite declaration of the importance of the extraction of the maximum amount of benzole and toluene, and although this is a belated admission, we are, nevertheless, now assured from the highest authority that it is necessary for all gas-works and coking plants to go out of their way to extract every trace of these important products, even if actual profit is not reasonably assured. The Minister admits that economic and technical factors may arise in particular undertakings and has set up an Advisory Committee to give assistance and advice to those in doubt on any aspect of extraction. It would seem to me that if it does not pay in any particular instance that undertaking should be recompensed from State funds. There is one thing which the Minister can do which will do a great deal to achieve his object of a large output of benzole—and that is to ensure that at whatever cost the gas-works of the country, not only in the mining districts, but in the south and the west, shall have all the coal they want no matter who else may suffer so that oil for carburation may be cut down to the lowest possible minimum. Gas and its by-products are essential to the winning of the war, and it is to be hoped that never again shall we hear of the rationing of gas; rather should its use be encouraged and the use of imported fuels be discouraged if not actually prohibited.

"It is good to hear that the President is an enthusiast on gas lighting and I am convinced that he is right in using it in his own house. He thus shows practical confidence in what he preaches. I am glad too, that he has drawn attention to the quality of good gas lighting and has referred to the warmth that automatically comes into play when gas lighting is installed."

The vote of thanks was seconded by Mr. P. M. WATSON (Skinningrove), supported by Mr. H. E. BLOOR (York) and adopted with acclamation.

THE GAS INDUSTRY IN PEACETIME AND WAR

Paper to the Wales and Monmouthshire Association of Gas Engineers at their Annual Meeting at Porthcawl.

By

H. D. MADDEN, M.Inst.C.E., M.I.Mech.E.,

Engineer and Manager of the Cardiff Gas Light and Coke Company.

In 1914, nearly 26 years ago, war broke out with dramatic suddenness and found this country unprepared for a campaign of such magnitude, and the prolongation of the period for over four years caused a very great strain on the resources of the country and on our own particular Industry.

The calls for military service on the man power of the civil population disorganized many industries, and the voluntary recruiting scheme added to our difficulties through the patriotic enlistment of men of all ages and classes who immediately offered themselves for service in H.M. Forces, leaving depleted ranks in the essential industries. At that time the Gas Industry was not organized as it is to-day. The Institution of Gas Engineers and the newly-created British Commercial Gas Association were the only bodies in existence and neither was so constituted as to be in a position to speak as a single voice on behalf of the Gas Industry.

The war brought entirely new problems to us, the sudden demands for gas for domestic and industrial purposes soared to unknown figures, and the new industrial application brought many problems in its train.

Coal and oil supply difficulties were not unknown, prices of commodities and wages soared in vicious spirals and, as the war lengthened, so the difficulties increased in obtaining the necessary supply of steel and other materials for renewals or extensions to meet the largely increased output required of the industry.

The introduction of female labour assisted in filling the vacancies created by the men who had joined H.M. Forces but this innovation brought difficulties which, however, were gradually surmounted.

During those war years the Industry was working to the old illuminating power standard and, with the introduction of tar and oil washing for toluol to meet the immediate high explosive needs of the fighting services, illuminating power values had to take a secondary place. In addition, coal supplies were difficult, and as they soared in price the quality deteriorated. No serious attention was given to calorific power and specific gravity conditions of the gas supply, the immediate necessity being to meet the heavily increased demand.

Undertakings suffered through highly increased costs, both in regard to wages and materials, with a gradual drop in dividends and profits through the operation of old Acts which limited the maximum selling price of gas, thereby making it impossible to increase prices to meet unthought-of conditions which had been brought about suddenly by a war of such unforeseen magnitude.

Owing to the scarcity of materials and labour due to urgent government and military requirements, renewals had perforce to be postponed and neglected, and at the end of the war most undertakings were faced with a list of deferred renewals and urgent extension requirements that were appalling.

Out of this difficult and chaotic period some bright facts emerge:

(1) The Gas Industry carried on nobly throughout the strain and met its new and heavy demands.

(2) Attention was focussed on the desirability of examining the various qualities of gas supplied, and the potentiality of a heat or thermal standard in place of the old I.P. or photometric valuation.

(3) The great lead given by the late Lord Moulton when he was Director of High Explosives, and also when he was President of The Institution of Gas Engineers. In his Presidential Address he indicated the value of the products by the carbonization of coal and portrayed a pathway for the future development and prosperity of the Gas Industry by the scientific carbonization of coal and the treatment of the many valuable products obtained thereby.

Post War

After the Armistice, when the Industry had, so to speak, time to lick its wounds, the lessons of the previous four years were carefully studied. Lord Moulton's advice in regard to the value of the products of carbonization bore fruit, and the importance of the Gas Industry was recognized when the Government set up a Scientific Committee of Enquiry which reported that gas should be sold on a heating or thermal basis.

In 1920 this recommendation was followed by the introduction of the Gas Regulation Act, which was recognized as a great charter for the Gas Industry and its future development. About that time also the Government set up the Fuel Research Board on which ultimately for four years the writer was honoured by being elected a member.

The late Dr. Chas. Carpenter, of the South Metropolitan Gas Company, realized the value of the Gas Regulation Act and in 1921 brought an Act before Parliament which not only gave his Company powers to supply gas on a thermal basis but introduced the principle of the basic price plus co-partnership—an Act which enabled the shareholders, consumers, and employees to benefit mutually by good administration and working. My own Company, Cardiff, followed, and was the second undertaking in the country to obtain powers to work under this principle—a principle which removed many of the hardships of price, &c., under which we laboured during the last war.

From immediate post-war years up to date, events and developments followed fast, and Sir David Milne-Watson proved an able leader at a time when the Industry most needed one.

The formation of the National Gas Council followed, and this body enabled the Industry to co-ordinate policies and speak to the Government Departments with one voice. The wisdom of this course is becoming more evident year by year. In order to deal with the labour problems which had arisen within the ranks of the Gas Industry, the National Gas Council formed the Federation of Gas Employers and the Joint Industrial Council, and together they tackled a huge task. To-day the smooth working and mutual appreciation of each other's problems and difficulties is a monument to those able minds who created these two bodies and steered them through many dangers into safe waters.

The British Commercial Gas Association was re-created and strengthened, and the growing power of its propaganda work and the effect on the public mind during the past twenty years can only be fully realized by those who remember the years when the Industry had neither the organization nor the appreciative value of publicity work.

Research

There is no question but that Lord Moulton and the Fuel Research Board turned the wholehearted attention of the Gas Industry to all its problems, from the carbonization of coal to the combustion of gas and propagation of flame in domestic and industrial apparatus.

The Institution of Gas Engineers entered very fully into the sphere of research, and the evidence of the Papers submitted at the Annual Autumn Research meetings indicate the vast strides made in this direction and the intense interest of the members in these Papers.

An examination of the carbonizing and ancillary plants installed in gas-works during the past twenty years bears silent witness to the practical application of the outcome of research undertaken; and in this connexion the work of the members of the Society of British Gas Industries has developed and progressed beyond imagination—as examples, the design of modern carbonizing plant to the latest gas cooker or gas fire indicate the strides made since the last war.

The work of Watson House and the Joint Committee of Industrial Gas Centres portrays what has been done and gives some indication of the magnitude of the investigation work which lies before us.

In 1930 the Government introduced the Coal Mines Act which, originally, was for the better working of the coalfields, but, even before the present war, contact was made with the Executive Committee of the Gas Industry regarding the problems of coke, and closer co-ordination of work will surely result.

The formation of the London and Counties Coke Association for the improvement and development of qualities and sales of coke has done much to raise the prestige and utility

of this, once, Cinderella fuel, and the formation of the Gas Coke Export Association, the National Federation of Gas Coke Associations, and the International Coke Cartel has already done a great deal to foster the cause of coke sales.

The foregoing can only be a general résumé, tracing the great advances made by the Gas Industry since the last war; but it is surely a guide and a beacon to the problems we may be called upon to face in the future, and with that accomplished experience we should surely face the future with a strengthened knowledge and resolution.

1939

In September, 1939, our country and France were once again called upon to take up the sword, and, for at least a year before, rumblings and warnings of possible war sounded over Europe and somewhat prepared our country to wake up and take some necessary precautions.

The Mines Department became interested in the supplies and prices of gas coke, whether for domestic or export supplies, and that Department began to take a special interest in the stocks and supplies of coal for carbonization purposes—a recognition that gas undertakings were public utilities in the foremost rank of the fuel industries of the country.

Mobilization of men for the Army was commenced on a more orderly basis, with the least interference with organized industry; and it is recognized that in this war the co-ordinated effort of both the fighting forces and its supply industries must be kept on a balanced plane to ensure success, and in this connexion there is no doubt that the Gas Industry is now fully recognized not only as a great fuel industry for munition works, but as the greatest source of supply of high explosives, antiseptics, oils, and the many necessary chemical products obtained from the tar distilled from our carbonizing processes.

The evacuation of people from many populous areas had a depressing effect on the gas outputs in some cases and increases in others where the people went for temporary habitation.

We in South Wales suffered very badly from migration of population when the economic blizzard struck this area persistently for a number of years, and the influences of this in gas output is well experienced and understood by the members of our Association.

The severe weather experienced with the opening months of the war, with all its attendant difficulties of coal and coke transport, sickness, &c., has tested the resources of our Industry locally, and, as to the months lying ahead, it would be prudent to maintain ample stocks of coal and coke and also to carry out renewals as far as possible, rather than let them drift to a post-war period when a heavy burden might accrue.

In regard to steel work and structures, if a full painting programme is not possible, rust spots of corrosion should be dealt with immediately by the wire brush and the area red leaded. I mention this as being indicative of what can be done to maintain the whole of the plant. Such action, if persistently carried out, may utimately save large sums in reconstruction.

In regard to business development in the sales of gas, there is no reason why a condition of stalemate should prevail—the recent prestige advertising of the British Commercial Gas Association, and its adopted policy for continuance, should be strongly supported locally.

The great work that our Industry is doing in providing supplies of national importance in the shape of the derivatives of tar for war and national purposes offers a fine field for propaganda. For instance, the importance of sulphate of ammonia for fertilizing in the " Grow More Food " campaign; our home service sections can also render immense aid to the Government's food education campaign. Co-operation in this campaign offers a wonderful opportunity for maintaining and increasing consumer goodwill. The Ministry of Food sought the co-operation of the British Commercial Gas Association—such co-operation was readily given and, as is well known, the British Commercial Gas Association themselves inaugurated an excellent campaign.

In regard to domestic coke supplies, much leeway remains to be made up, and the writer commends to your notice the Paper recently presented by Mr. W. L. Boon (General Manager of the London and Counties Coke Association) on " The Present Coke Position and Post-War Outlook " (see " GAS JOURNAL," March 20, 1940), which thoroughly and efficiently deals with this important matter and lays down a standard upon which to work.

The position of tar, especially refined tar, should be made stronger, and it is advisable that the quality of this by-product should be maintained at the highest possible level so as to develop this business after the war.

It is a happy coincidence that the rationing of gas and electricity should have brought these two great industries into unison before the Ministry of Mines. The word " truce " is erroneous. " Understanding " is the better word, for undoubtedly the co-ordination of interests will be the beginning of a fuller understanding in the future when the words " Fuel Industries " will be appreciated as a national title for the incorporation and safeguarding of all interests—coal, gas, and electricity—enabling all three to develop to their fullest capacity without wasteful and unnecessary competition.

Gas Undertakings' Results

Caledonian Corporation

The accounts of the Caledonian Gas Corporation, Ltd., which are made up yearly to Dec. 31, show a revenue for the past year amounting to £26,889. The Corporation have holdings (in ten cases of 100%) in nineteen subsidiary companies. The capital is in cumulative preference shares, preferred ordinary shares, and ordinary shares, the dividend on the last named being at the rate of 3½% per annum, which will leave to be carried forward a balance of £1,120.

Horncastle

Some decrease in the consumption of gas and also in the number of consumers during the twelve months ended March 31 last is reported by the Horncastle (Lincs.) Urban District Council. At the end of the period the number of consumers was 940, as compared with 957 a year ago, while the quantity of gas made was 14,288,000 cu.ft., against 16,130,000 cu.ft. in the preceding twelve months.

Montevideo

The Directors of the Montevideo Gas and Dry Dock Co., Ltd., in their report for the year 1939, state that, as compared with the previous year, there has been an increase in the sale of gas of 6.4%, and in the number of consumers of 6.02%. The net profit for the year is £47,237, and £61,354 was brought forward from 1938, making a total of £108,591. The payment of a final dividend of 3%, making, with the interim dividend already paid, 4% free of income-tax for the year, will leave to be carried forward £79,091. The present dividend is payable as to 2% on the 22nd inst., and as to 1% on Dec. 2 next. For 1938 the dividend was the same.

North Cheshire

At the Annual Meeting of the North Cheshire and District Gas Company, the Chairman (Colonel W. M. Carr) said the accounts covered the first complete year's working of the amalgamated undertakings of Hyde, Dukinfield, and Denton. The war had occasioned a very serious decrease in the sale of gas for street lighting, but, nevertheless, the expansion of business in the period had been a record for the area, no fewer than 3,867 major appliances having been fixed and 484 new consumers connected. The length of new mains laid during the year was 6 miles 783 yards. Increased costs of coal and wages had unfortunately necessitated an increase in the price of gas by 1d. per therm, which came into force as and from Jan. 1 of the current year. Gas was being increasingly used by industry throughout the area, and as a result, the sales in the first quarter of the current year showed an increase of no less than 30%. The Directors recommended a final dividend of 2% on the ordinary stock making a total of 4½% for the year, as compared with 5% for 1938. There was no question that had it not been for the war the basic dividend of 5% would have been maintained. The Company is taking part in the Food Economy campaign inaugurated by the Minister of Food, and demonstrations are being organized.

Stafford

During the twelve months ended March 31, the quantity of gas sold by the Borough of Stafford Gas Department was 379,861,500 cu.ft. Of this, quarterly consumers took 210,850,100 cu.ft., prepayment consumers 166,293,400 cu.ft., and public lighting 2,718,000 cu.ft. In the preceding year, the quantity sold was 367,236,100 cu.ft. Both quarterly and prepayment consumptions are well up, but there is, of course, a big reduction under public lighting, which is down from 13,830,000 cu.ft. The gain under the heading of quarterly consumers is entirely on the industrial side, the consumption for such purposes having gone up from 86,787,200 cu.ft. to 142,521,500 cu.ft. The gross profit carried to Net Revenue Account is £18,788, which compares with £19,910 a year ago.

GAS DRYING

by

JAMES G. GAUNT.

Assistant Engineer, Calverley and Horsforth District Gas Company

From a Paper to the Yorkshire Junior Gas Association, April 20.

The Author recounted experience at Calverley, where a Holmes "Dri-Gas" plant is in use.

All that is necessary is for a circuit of the district syphons to be made once every six months to ensure freedom from water trouble, and this visit is more in the nature of an inspection than a definite clearing of syphons, as the quantities of liquor removed are extremely small.

Water in services is now an unknown occurrence except where the water has gained access to the main or service from the exterior.

For a time after the installation of the Dri-Gas plant, it was found that the number of complaints of shortage of gas due to restricted services was not decreasing. The trouble, however, was not caused by water, for, upon cutting the services, it was found that the obstruction usually consisted of dry rust particles. After a time, the number of service complaints became fewer and is now reduced to 100 or so per annum, representing one complaint per 60 services per annum.

It is difficult to obtain any figures about the effect of drying the gas upon the life of meters, particularly as we do not carry out our own meter repairs. The majority of failures of meters, however, appear to be due to mechanical trouble rather than corrosion.

Running Cost of Plant

	£	s.	d.
Capital charges at 10% per annum on £575	57	10	0
Calcium chloride used per annum, 15 cwt. at 6s. 9d.	5	1	3
Labour	5	0	0
Steam : 788,000 lb. at 1s. 3d. per 1,000 lb.	49	5	0
Total	£116	16	3

The foregoing figure represents a cost of 0.2d. per 1,000 cu.ft. of gas treated.

At Calverley, we found for a number of years after the installation of the dehydrating plant that complaints due to the deposition of gum in pilot jets and injectors were increasing. In 1937, following recommendations given by Mr. H. Hollings in his Paper on Gum Formation, presented at the previous research meeting of the Institution of Gas Engineers, the Dri-Gas plant connexions were altered to bring the plant to the outlet of the holders, it having previously been connected in the holder inlet main. The oil films were removed from the water in the holders. Almost immediately the gum trouble showed signs of decrease, and some idea of the improvement may be formed from the fact that by-pass lights in the works laboratory which previously required adjustment in well under a week now run from seven to eight weeks before adjustment is necessary.

The overloading of a Dri-Gas plant is not so detrimental to its efficiency as might be expected. Up to 40% overload the dew point of the gas will not be altered appreciably. Above this figure the dew point tends to rise, but the rise can be counteracted to some extent by the circulation of more chloride and the supply of more water to the cooler. By placing our plant on the outlet of the holders, it is at times subjected to an overload of 60%, but this occurs only at peak periods of very short duration in the winter months when the gas inlet temperature is low and the chloride solution can easily be kept cool. In summer the overload rarely exceeds 20%, which can easily be counteracted by the use of more cooling water.

The dew point at the outlet of our plant is maintained at 32° F. to 36° F. in winter, which rises to 42° F. in the warm weather.

From a consideration of the benefits to be derived and the cheapness of the process, it appears that gas dehydration is a money saving proposition which helps towards the all-important end of giving the consumer a service as efficient and free from interruption as possible.

In View of the International Situation, the meeting of the Manchester and District Junior Gas Association which was to have been held at Stockport on Saturday has been postponed, while it has been decided not to proceed with the arrangements to visit Southport on June 22.

London and Southern Juniors

Annual Business Meeting.

The Annual Business Meeting of the London and Southern District Junior Gas Association was held at Gas Industry House on Friday, May 17, the PRESIDENT (Mr. F. O. Hawes, Tottenham) presiding.

The HON. SECRETARY (Mr. B. W. Dawkins, Gas Light and Coke) read the minutes of the last meeting, which were confirmed and signed.

Reviewing briefly the activities of the Association during the past session, the PRESIDENT said that they had started out with the idea that informal meetings, somewhat on the lines of their discussion groups, would be more suitable to the circumstances. They came to the conclusion, however, that this was a mistake, and the two subsequent evening meetings they had held had been most successful. They might have been wiser to have got into their stride at the beginning of the session.

They would be interested to know, proceeded Mr. Hawes, that at least two dozen of their members were on Active Service, and he had no doubt there were others of whom they had not been advised. Another matter for gratification was that their old friend Mr. P. F. Scarth had accepted the Council's invitation to become an Hon. Member of the Association. The S.B.G.I. Silver Medal for the Paper adjudged to have been the best read to the Association during the previous session had been awarded to Mr. L. F. Randall for his Paper on "The Servicing of Gas Appliances." As President of the Junior Association, he had attended two meetings of the Southern Association of Gas Engineers and Managers during his year of office.

With reference to the Officers for the coming year, Mr. Hawes said that the Council had decided, in view of the fact that the past session had been such a barren one, to ask the existing officers to remain in office for a further term. In this connexion, he was sorry to say that their Hon. Secretary, Mr. Dawkins, had found it impossible to carry on by reason of his other duties; but they had been fortunate in getting Mr. C. A. Deas, of the Tottenham and District Gas Company, to succeed him. Consequent upon his appointment at Southport, their Assistant Hon. Secretary, Mr. H. J. Risby, had been obliged to relinquish this office, and they were grateful to Mr. J. E. Gray, of the Gas Light and Coke Company, for taking over his duties. In conclusion, the President expressed his appreciation of the work of the Hon. Secretary.

The President's report was unanimously adopted on the proposition of Mr. A. R. COWLISHAW (South Metropolitan), seconded by Mr. C. A. DEAS (Tottenham). The financial statement for the session 1939-40 was submitted by the HON. TREASURER (Mr. S. J. Gibbons, Gas Light and Coke) and unanimously adopted on the proposition of Mr. S. C. WALDOCK (Gas Light and Coke), seconded by Mr. T. G. NOBLE (Gas Light and Coke).

Mr. R. M. MUNNS (Gas Light and Coke) proposed a cordial vote of thanks to the Officers and Council of the Association for their work during the past session. This was seconded by Mr. J. G. JOYCE (Gas Light and Coke) and unanimously accorded.

Officers and Council

On the proposition of Mr. J. GRAYSTON (Romford), seconded by Mr. C. A. DEAS, the Officers were re-elected. The Officers and Council (elected by ballot) for the ensuing year are, therefore, as follows:

President.—F. O. Hawes (Tottenham).
Senior Vice-President.—G. Dougill (Gas Light and Coke).
Junior Vice-President.—H. Moys (Croydon).
Hon. Treasurer.—S. J. Gibbons (Gas Light and Coke).
Hon. Secretary.—C. A. Deas (Tottenham).
Assistant Hon. Secretary.—J. E. Gray (Gas Light and Coke).
Hon. Auditor.—G. Wilson Smith (Gas Light and Coke).
Council.—L. W. Andrews (Gas Light and Coke), B. W. Dawkins (Gas Light and Coke), F. H. Higton (East Surrey), R. W. Latham (Croydon), G. H. Kenyon (Lea Bridge), T. G. Noble (Gas Light and Coke), G. H. Rodgers (Gas Light and Coke); and, *ex-officio*, R. N. LeFevre (Gas Light and Coke), S. C. Waldock (Gas Light and Coke), W. A. Howie and F. Blackburn (Hon. Secretary and President respectively of the Southern Association of Gas Engineers and Managers).

A vote of thanks to the Scrutineers (Messrs. Holgate and Petersen) was accorded on the proposition of Mr. LATHAM, seconded by Mr. NOBLE.

The representatives to serve on the District Education Committee were announced as follows: T. H. Prater (Margate), Hon. Secretary; F. O. Hawes, G. Dougill, and C. A. Deas.

A vote of thanks to the Press was accorded on the resolution of Mr. GRAYSTON, seconded by Mr. LEFEVRE, and duly acknowledged by the representatives present.

The PRESIDENT reminded members of the forthcoming visit to the Tottenham Gas-Works on Saturday, June 1, and expressed the hope that there would be a good attendance. In conclusion, the President referred to the Rule which required a member of the Council to retire after five years if he should not have been elected to some higher office in the meantime. He suggested that this Rule had on more than one occasion resulted in the loss to the Council of men whose wisdom and experience could ill be spared. While he did not propose to put forward any specific resolution in this connexion at this meeting, he thought the members might wish to consider the matter for attention at some future date.

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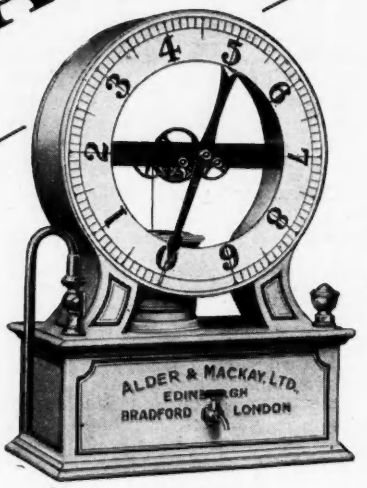
King's PRESSURE GAUGES



Illustrated is the Circle Gauge for 9" readings which is a particularly sensitive instrument. The brass spindle is located on roller bearings and the black figures are 1¼" high on a 14" diam. white enamelled dial. The filling plug and gas connection are interchangeable.

Further particulars of other gauges and prices will be sent on application.

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Sales of Gas Products

The London Market

May 20.

There is little of interest to record in the prices of tar products in the London market, to-day's values being as follows: Pitch about 50s. per ton f.o.b.; creosote, about 5d. per gallon; refined tar, 3¼d. to 4d. per gallon; the price of pure toluole under the Ministry of Supply Order is just under 2s. 5d. per gallon; pure benzole, 1s. 10d.; 95/160 solvent naphtha, 1s. 11d. to 2s., and 90/160 pyridine about 18s. 6d., all per gallon naked; refined naphthalene crystals, £23 per ton in bags, all *ex* makers' works.

The Provinces

May 20.

Crude Gas-Works tar, 27s. 3d. to 32s. 3d.

To avoid misunderstanding, it is necessary to state that the above price is not claimed to represent a market value. It is a price worked out from week to week upon a system which has been used for many years as a basis for the fixing of certain contracts for crude tar of varying qualities in different areas.

The average prices of gas-works products during the week were: Pitch—East Coast, 47s. 6d. to 52s. 6d. f.o.b. West Coast—Manchester, Liverpool, Clyde, 47s. 6d. to 52s. 6d.* Toluole, naked, North, 1s. 9½d. (Controlled by the Ministry of Supply Order No. 1, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 9d. to 9½d. Solvent naphtha, naked, North, 1s. 8d. to 1s. 9d. Heavy naphtha, North, 1s. 4½d. to 1s. 5½d. Creosote, *ex* works, in bulk, North, liquid and salty, 4½d. to 4¾d.; Scotland, 4¼d. to 4¾d.; low gravity, 4¼d. to 4¾d. Fuel Grade, 4d. to 4¼d. Carbolic acid, 60's. 3s. 6d. to 3s. 7½d. Naphthalene, £15 to £20. Salts, 75s. to 85s., bags included. Anthracene, "A" quality, 4½d. to 4¾d. per minimum 40% purely nominal. Heavy oil: Unfiltered anthracene oil, (min. gr. 1,080), 5¼d. to 5½d.; filtered heavy oil (min. gr. 1,080), 5¾d. to 6d.; heavy anthracene oil gr. less than 1,080, 6d. to 6¼d.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls, whatever they may be.

Scotland

GLASGOW, May 18.

A steady throughput is being maintained in most products, and prices are well up to previous levels.

Crude gas-works tar.—Actual value is 39s. to 40s. per ton *ex* works in bulk.

Pitch remains steady at about 40s. per ton f.o.b. for export and about 37s. 6d. per ton *ex* works in bulk for home trade.

Refined tar.—For delivery in the home market price is fixed by arrangement at 4¼d. to 4½d. per gallon. Export business is quoted at 3d. to 3¼d. per gallon, both f.o.r. naked.

Creosote oil.—Supply and demand is about equal and values are steady as under: Specification oil, 5¼d. to 5¾d. per gallon; low gravity, 6¼d. to 7d. per gallon; neutral oil, 6d. to 6½d. per gallon; all *ex* works in bulk.

Cresylic acid.—This product is not too active and supplies can be secured as follows: Pale, 97/99%, 2s. 1d. to 2s. 2d. per gallon; dark, 97/99%, 1s. 10d. to 1s. 11d. per gallon; pale, 99/100%, 2s. 6d. to 2s. 8d. per gallon; all *ex* works in buyers' packages.

Crude naphtha remains at 6d. to 6½d. per gallon, *ex* works in bulk.

Solvent naphtha is 1s. 8d. to 1s. 9d. per gallon for 90/160 grade, and 1s. 4d. to 1s. 5d. per gallon for 90/190 heavy naphtha.

Motor benzole is 1s. 6½d. to 1s. 7d. per gallon.

Pyridine.—Prices are nominal at 18s. to 19s. per gallon for 90/160 grade and 20s. to 21s. per gallon for 90/140 grade.

Contracts Advertised

Painting Gasholder.
Ossett Gas Department. [p. 410.]

Coal.
Abertillery Gas Department. [p. 410.]
Nantwich Gas Company. [p. 410.]
Sutton-in-Ashfield Gas & Water Department. [p. 410.]

Tubes and Fittings.
Sutton-in-Ashfield Gas & Water Department. [p. 410.]

Meters.
Sutton-in-Ashfield Gas & Water Department. [p. 410.]

Engine Waste.
Sutton-in-Ashfield Gas & Water Department. [p. 410.]

Engine and Cylinder Oil.
Sutton-in-Ashfield Gas & Water Department. [p. 410.]

Oxide.
Sidmouth Gas Department. [p. 410.]

Stewarts and Lloyds, Ltd.

Satisfactory Results of Past Year

The 50th Ordinary General Meeting of Stewarts & Lloyds, Ltd., was held in the Merchants' Hall, 30, George Square, Glasgow. Mr. A. C. Macdiarmid, the Chairman, presided, and in the course of his remarks to the shareholders said: In the circumstances in which we find ourselves to-day—we are part of a controlled industry contributing our utmost to the war effort—I do not intend to make the usual detailed review of the Company's activities or the usual detailed analysis of the accounts. After providing for excess profits tax, National Defence Contribution, income-tax (including the additional assessment in respect of 1938 under the Finance (No. 2) Act of 1939), and expenditure on air raid precautions, the profit works out at the figure of £1,990,699, which compares with £2,049,107 for the previous year.

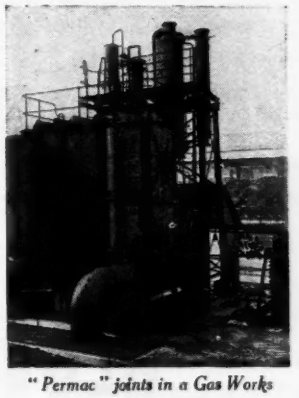
We now own the whole issued capital of the Stanton Ironworks Co., Ltd. The arrangement is working smoothly and efficiently, and there is no doubt in our minds as to the fulfilment of our expectations.

We have transferred to the appropriation account the sum of £90,000 which stood at the credit of employees' benefit reserve in last year's balance-sheet. I mentioned in my speech at the last annual meeting that it was our intention to add to the £120,000 invested outside the business the £50,000 which was placed that year to employees' benefit reserve. On further consideration your Directors came to the conclusion that it would be better to make some more permanent arrangement with regard to the employees' benefit fund. This arrangement, under which it is proposed to make an annual grant of £70,000 to the trustees for a period of years, makes the reserve of £90,000 unnecessary, and, as I have stated, it has been transferred to the appropriation account. Under the new arrangement the fund will be self-supporting, and the balance of the £70,000, plus the income from investments, after meeting the year's outgoings, will be invested by the trustees.

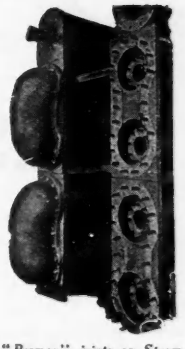
Our Australian and South African subsidiaries continue to prosper. Their manufacturing capacity has been increased during the year and both companies are in a very sound position. Our branches in New Zealand, Egypt, and China have had a successful year. Apart from our great and ever-increasing contribution to the main war effort, we are doing what we can to maintain our export trade, to support and extend which we have made heavy sacrifices in the past.

Permac

the all-purpose jointing



"Permac" joints in a Gas Works



"Permac" joints on Steam and Benzol Bye-product Plant. Right — covers removed for jointing.

"Permac" will make and keep tight every joint in your works—from the simplest to the most difficult—both flange and screwed pipe. It thus affords an important economy—dispensing with the need for keeping supplies of various jointings in stock. "Permac" stands up to all temperatures and pressures. Send for particulars.

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GAS STOCKS AND SHARES

The grave events of last week naturally caused a setback to business on the Stock Exchange although the period closed with the position well in hand. Some liquidation was inevitable and in the absence of support this had a more marked effect on prices. British Funds fell, but in no case did the reaction exceed 2 points on the week and prices are still above the minima; 2½% Consols closed at 71½ against 73 a week ago. The brunt of the situation was borne by the home rail market which suffered severely, even the prior charge stocks reacting sharply. Leading industrials did not escape and prices were very irregular. Dealers, however, are discouraging sales so that liquidation was reduced to a minimum.

The volume of business in the Gas Market was also on a reduced scale and inevitably a few of the leading stocks reacted, though on the whole prices were maintained. Gas Light units dropped 1s. to 15s. and two of the Company's fixed-interest stocks also weakened. South Metropolitan closed 2 points lower at 65½, South Eastern £1 shares dropped 1s. 6d. to 15s., Wandsworth was 3 down at 87½, while Imperial Continental was marked *ex* dividend, with a drop of 8 points to 55. On the other hand, enquiries for Northampton 5% maximum led to a rise of 7 points in the quotation of this stock to 99½.

On the Provincial Exchanges, Newcastle units dropped 1s. 1½d., and it is interesting to note that on the London Exchange these units are quoted higher at 19s. 9d., business being recorded last week at 19s. 10½d. As an almost invariable rule the quotations on the home exchanges are a few points higher than in London, *e.g.*, at the present time Bristol is quoted at 106 at Bristol, but 102½ on the London Exchange, while Sheffield is 126 against 124½ in London.

The only change of note in the Supplementary List was a rise of 6 in Slough 5% debenture to 100½, after a sale at 99 during the week.

Official Quotations on the London Stock Exchange

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations May 17.	Rise or Fall on Week.
1,767,439	Mch. 11	8	7	Alliance & Dublin Ord. ...	112—117	..
374,000	Dec. 27	4	4	Do. 4 p.c. Deb. ...	80—90	...
957,608	May 13	5	5	Asscd. Gas & Water U'd'ts Ord.	14/—16/-*	—/6
500,000	,,	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	16/-—18/-*	—/6
535,545	,,	4	4	Do. 4 p.c. Red. Cum. Pref.	14/6—16/6*	—/6
336,646	,,	4	4	Do. 4 p.c. Irred. Cum. Pref.	13/—15/-*	—/6
750,000	Mch. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	82—87	...
560,070	Feb. 19	7	7	Barnet Ord. 7 p.c.	122—127	—1
300,000	Apl. 8	1/4⅜	1/9⅜	Bombay, Ltd.	19/6—21/6	...
181,915	Feb. 26	9½	9½	Bournemouth Sliding Scale ...	145—150	...
690,526	,,	7	7	Do. 7 p.c. max. ...	123—128	...
493,960	,,	6	6	Do. 6 p.c. Pref. ...	116—121	...
50,000	Dec. 18	3	3	Do. 3 p.c. Deb. ...	70—75	...
362,025	,,	4	4	Do. 4 p.c. Deb. ...	95—100	...
335,000	,,	5	5	Do. 5 p.c. Deb. ...	105—110	...
357,900	Feb. 19	7½	6⅔	Brighton, &c., 6 p.c. Con. . .	103—108	..
659,955	,,	6⅔	5⅞	Do. 5 p.c. Con. ...	100—105	...
205,500	,,	6	6	Do. 6 p.c. 'B' Pref. ...	103—108	...
855,000	Mch. 11	7	8	British Ord.	90—100	...
100,000	Dec. 18	7	7	Do. 7 p.c. Pref.	120—125	...
350,000	,,	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115	...
120,000	,,	4	4	Do. 4 p.c. Red. Deb.	77—82	...
450,000	,,	5	5	Do. 5 p.c. Red. Deb.	100—105	...
100,000	22 May '33	6	4	Cape Town, Ltd.	½—¾	...
100,000	6 Nov. '33	4½	4½	Do. 4½ p.c. Pref.	½—¾	...
150,000	Dec. 18	4½	4½	Do. 4½ p.c. Deb.	53—58	...
626,860	Jan. 29	6	5⅞	Cardiff Con. Ord.	103—108	...
237,860	Dec. 18	5	5	Do. 5 p.c. Red. Deb. ...	95—100	...
98,936	Apl. 8	2/—	2/-	Colombo Ord.	1½—1½	...
24,510	,,	1/4⅜	1/4⅜	Do. 7 p.c. Pref.	20/—22/—	...
739,453	Mch. 26	—/11.48	—/11.48	Colonial Gas Assn. Ltd. Ord. ...	14/6—16/6	...
296,144	,,	1/3.30	1/3.30	Do. 8 p.c. Pref.	20/—22/—	...
1,775,005	Jan. 29	4	2	Commercial Ord.	45—50	...
140,000	Feb. 19	4	4	Do. 4 p.c. Red. Pref. ...	87—92	...
620,000	Dec. 11	3	3	Do. 3 p.c. Deb.	62—67	...
286,344	Feb. 19	5	5	Do. 5 p.c. Deb.	97—102	...
200,000	,,	3¾	3¾	Do. 3¾ p.c. Red. Deb. ...	93—98	...
807,560	Feb. 12	7	7	Croydon sliding scale	100—105	...
644,590	,,	5	5	Do. max. div.	87—92	...
620,385	Dec. 7	5	5	Do. 5 p.c. Deb.	103—108	..
208,660	Feb. 19	5	5	Dudley, Brierley Hill & Dist. Ord.	98—103	...
82,275	,,	5	5	Do. 5 p.c. Con. Pref. ...	93—98	...
79,000	,,	3¾	3¾	Do. 3¾ p.c. Red. Deb. ...	93—98	...
239,000	Jan. 29	5	88/6	East Hull Ord. 5 p.c.	70—80	...
187,215	Feb. 12	5⅜	5⅜	East Surrey Ord. 5 p.c. ...	93—98	...
176,211	Dec. 18	5	5	Do. 5 p.c. Deb. ...	100—105	...
250,000	Nov. 13	8	4	Gas Consolidation Ord. 'B' ...	15/—17/—	...
250,000	May 13	4	4	Do. 4 p.c. Red. Cum. Pref.	15/—17/-*	—1/—
19,152,410	Jan. 29	5⅜	3⅜	Gas Light & Coke Ord. ...	14/—16/-a	—1/—
2,600,000	,,	3½	3½	Do. 3½ p.c. max.	62—67	..
4,477,106	,,	4	4	Do. 4 p.c. Con. Pref. ...	85—90	—2
2,993,000	Jan. 2	3¾	3¾	Do. 3¾ p.c. Red. Pref. ...	88—93	...
8,602,497	Nov. 27	3	3	Do. 3 p.c. Con. Deb. ...	72—77	—2
3,642,770	,,	5	5	Do. 5 p.c. Red. Deb. ...	105—110	...
3,500,000	,,	4½	4½	Do. 4½ p.c. Red. Deb. ...	102—107	...
700,000	Mch. 11	3¼	3¼	Do. 3¼ p.c. Red. Ded. ...	87—92	...
270,466	Feb. 19	6	6	Harrogate New Cons.	93—98	...
157,500	Apl. 8	‡1/—	‡1/—	Hong Kong and China Ord. ...	¼—¾	...
5,600,000	May 13	4	8	Imperial Continental Cap. ...	50—60*	—8
172,810	Jan. 29	3½	3½	Do. 3½ p.c. Red. Deb. ...	80—85	...
63,480	Dec. 18	3	3	Maidstone 3 p.c. Deb.	55—60	...
45,000		†10	†8	Malta & Mediterranean ...	92—102	...
				Metropolitan (of Melbourne) ...		
392,000	Apl. 1	5½	5½	5½ p.c. Red. Deb.	95—100	...
231,977	Feb. 19	5	5	M.S. Utility 'C' Cons. ...	78—83	...
968,658	,,	4	4	Do. 4 p.c. Cons. Pref. ...	85—90	...
390,076	Dec. 18	4	4	Do. 4 p.c. Deb. ...	87—92	...
148,955	Dec. 18	5	5	M.S. Utility 5 p.c. Deb. ...	103—108	...
125,000	Jan. 2	3½	3½	Do. 3½ p.c. Red. Bds. ...	90—95	...
675,000	May 6	†4	†4	Montevideo, Ltd.	58—63	...
250,000	Mch. 18	7½	5⅞	North Middlesex 6 p.c. Con. ...	103—108	...
396,160	Jan. 29	5	5	Northampton 5 p.c. max. ...	97—102	+7
300,000	Apl. 29	9	7	Oriental, Ltd.	113—118	...
468,537	Dec. 11	8	7	Plymouth & Stonehouse 5 p.c.	118—123	...
621,667	Feb. 5	8½	8½	Portsmouth & Gosport Cons.	110—115	...
241,446	,,	5	5	Do. 5 p.c. max.	85—90	...
73,350	,,	5	5	Do. 5 p.c. Pref.	90—95	...
75,000	,,	4	4	Do. 4 p.c. Pref.	75—80	...
114,000	Feb. 5	5	5	Preston 5 p.c. Pref.	88—93	...
247,966	Dec. 18	4	4	Primitiva 4 p.c. Cons. Deb. ...	93—98	...
625,959	Jan. 15	4	4	Do. 4 p.c. Red. Deb. ...	91—96	...
15,000	Mch. 11	6	6	San Paulo 6 p.c. Cum. Pref. ...	7½—8½	...
441,275	Apl. 29	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	16/6—18/6	...
460,810	Mch. 11	—/10⅝	—/10⅝	,, ,, 4½ p.c. Cum. Pref. ...	16/6—18/6	...
133,201	Feb. 12	8½	5	Shrewsbury 5 p.c. Ord. ...	105—115	...
9,000	June 5	‡4	‡4	South African Ord.	4—5	...
1,996,297	Apl. 29	1/2⅜	1/	South East'n Gas Cn. Ld. Ord.	14/-—16/-	—1/6
1,000,000	Mch. 4	—/10⅜	—/10⅜	Do. 4½ p.c. Red. Cum. Pref.	16/6—18/6	...
769,191	,,	4	4	Do. 4 p.c. Cum. Pref. ...	15/-—17/-	...
450,000	Feb. 12	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...
150,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	89—94	...
6,709,895	,,	5	4	South Met. Ord.	63—68	—2
1,135,812	,,	6	6	Do. 6 p.c. Irred. Pref. ...	110—115	...
850,000	,,	4	4	Do. 4 p.c. Irred. Pref. ...	84—89	...
1,895,445	Dec. 27	3	3	Do. 3 p.c. Deb.	72—77	...
1,000,000	Jan. 15	5	5	Do. 5 p.c. Red. Deb. ...	102—107	..
600,000	,,	3¾	3¾	Do. 3¾ p.c. Red. Deb. ...	92—97	...
1,543,795	Feb. 5	6	3	South Suburban Ord. 5 p.c. ...	77—82	...
512,925	,,	5	5	Do. 5 p.c. Pref.	93—98	—2
500,000	,,	4	4	Do. 4 p.c. Pref.	82—87	..
250,000	,,	3¾	3¾	Do. 3¾ p.c. Red. Pref. ...	90—95	..
888,587	Dec. 11	5	5	Do. 5 p.c. Deb.	105—110	...
250,000	,,	4	4	Do. 4 p.c. Deb.	87—92	...
200,000	Feb. 12	3½	3½	Do. 3½ p.c. Red. Deb. ...	87—92	...
427,859	Apl. 15	—/9⅜	1/2⅜	S. Western Gas & Water Ord.	13/-—15/-	...
160,523	,,	—/10⅛	—/10⅛	Do. 4½ p.c. Red. Cum. Pref.	16/6—18/6	...
110,000	Dec. 18	4	4	Do. 4 p.c. Red. Deb. ...	90—95	..
750,541	Feb. 5	5	5½	Southampton Ord. 5 p.c. ...	77—82	...
148,836	Dec. 27	4	4	Do. 4 p.c. Deb.	87—92	..
350,000	Feb. 12	5½	5½	Swansea 5½ p.c. Red. Pref. ...	97—102	...
200,000	Dec. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—100	...
1,076,490	Feb. 26	6½	5	Tottenham and District Ord....	94—99	...
409,835	,,	5½	5½	Do. 5½ p.c. Pref.	103—108	...
62,235	,,	5	5	Do. 5 p.c. Pref.	95—100	...
453,380	Dec. 11	4	4	Do. 4 p.c. Deb.	87—92	...
1,247,505	Oct. 23	6	4	U. Kingdom Gas Cor. Ord. ..	14/-—16/-	...
1,085,952	May 13	4½	4½	Do. 4½ p.c. 1st Cum. Pref. ...	14/6—16/6*	—/6
772,709	,,	4	4	Do. 4 p.c. 1st Red. Cum. Pf.	14/-—16/-*	—/6
745,263	Dec. 18	4½	4½	Do. 4½ p.c. 2nd Non-Cum. Pf.	13/6—15/6	...
1,093,656	Mch. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	83—88	—1
378,106	Mch. 11	7	7	Uxbridge, &c., 5 p.c.	95—100	...
133,010	,,	5	5	Do. 5 p.c. Pref.	95—100	...
1,371,138	Feb. 5	6½	3½	Wandsworth Consolidated ...	85—90	—3
2,525,768	,,	4	4	Do. 4 p.c. Pref.	84—89	...
1,343,964	Dec. 18	5	5	Do. 5 p.c. Deb.	106—111	...
383,745	,,	4	4	Do. 4 p.c. Deb.	87—92	...
400,000	,,	3¾	3¾	Do. 3¾ p.c. Red. Deb. ...	90—95	...
558,342	Jan. 29	6½	6	Watford and St. Albans Ord. ...	95—100	...
200,000	,,	5	5	Do. 5 p.c. Pref.	95—100	...
200,000	,,	5½	5½	Do. 5½ p.c. Pref.	100—105	...
200,000	,,	4	4	Do. 4 p.c. Rd. Pf. (1973/8)	85—90	...
100,000	,,	33/4⅝	4	Do. 4 p.c. Red. Pf. (1959)	93—98	...
200,000	Dec. 11	3½	3½	Do. 3½ p.c. Red. Deb. ...	87—92	...

a.—The quotation is per £1 of Stock. * Ex. Div. † Paid free of income-tax. ‡ For year. § Actual.

Supplementary List and Provincial Exchanges overleaf.

STOCK AND SHARE LIST—Contd.

Supplementary List, not Officially Quoted, London

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Nominal Quotations May 17.	Rise or Fall on Week.
202,152	Mch. 18	5	5	Ascot Ord.	80—85	...
128,182	Dec. 27	5	5	Do. 5 p.c. Pref. ...	88—93	...
31,035	Mch. 4	–/9⅜	–/9⅜	Associated Utilities 4 p.c. Pref.	15/—17/–	...
100,000	Dec. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—95	...
17,000	Feb. 19	8	8	Bognor Orig. Ord. 'A' ...	102—112	...
62,210	,,	8	8	Do. New Add. 'A' ...	102—112	...
87,160	,,	7	7	Do. New 7 p.c. max. ...	95—105	...
37,440	Jan. 29	10	10	Cam. Univ. & Town 10 p.c. max.	145—155	...
125,970	,,	7	7	Do. 7 p.c. max.	110—120	...
39,025	,,	5	5	Do. 5 p.c. max.	80—90	...
96,410	Jan. 29	4½	4½	Cardiff 4½ p.c. Pref.	90—95	...
55,520	Feb. 19	6	6	Colchester 6 p.c. Pref.	100—105	...
90,550	Mch. 18	5	5	Do. 5 p.c. Deb. ...	98—103	...
150,000	Feb. 12	4	4	Croydon 4 p.c. Pref.	82—87	...
130,000	Dec. 27	4	4	Do. 4 p.c. Deb.	87—92	...
65,000	Mch. 4	7½	6⅞	Eastbourne 'A' 5 p.c.	105—110	...
198,000	,,	6	5⅝	Do. 'B' 3½ p.c.	93—98	...
112,312	,,	5	5	Do. 5 p.c. Pref.	90—95	...
130,000	Dec. 18	5	5	Do. 5 p.c. Deb.	98—103	...
130,500	Feb. 19	7½	7½	Exeter New Ord. (£10) ...	12—14	...
24,000	Aug. 21	8½	8½	Gt. Yarmouth 8½ p.c. max. (£30)	15—20	...
59,400	,,	7½	7½	Do. 7½ p.c. max. (£30) ...	10—15	...
51,160	Dec. 11	5½	5½	Do. 5½ p.c. Deb.	102—107	...
152,600	Feb. 26	8	9	Guildford Cons.	110—120	...
54,055	,,	5	5	Do. 5 p.c. Pref.	90—95	...
68,250	Dec. 11	5	5	Do. 5 p.c. Deb.	90—95	...
156,600	Feb. 19	7	5	Hampton Court Cons. ...	75—85	...
86,046	June 19	14½	‡5	Holyh'd&N.W.G.&W.Cpn.Ord.	13/6—15/6	...
80,000	Feb. 12	4	4	Lea Bridge 4 p.c. Pref.	75—80	...
60,000	,,	6	6	Do. 6 p.c. Pref.	105—115	...
94,876	Dec. 18	4	4	Do. 4 p.c. Deb.	88—93	...
73,620	Mch. 18	8½	8½	Luton Cons. 'A'	115—125	...
107,960	Feb. 26	4	5½	Mid Kent Ord. (£10)	7½—8½	...
230,940	Feb. 5	10	10	Oxford & District Ord. ...	135—145	...
47,112	,,	5	5	Do. 5 p.c. Pref.	85—90	...
50,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	100—105	...
126,193	May 13	7½	7½	Peterborough Ord.	138—148*	–2
64,990	Mch. 18	7	7	Redditch Ord.	100—110	...
166,850	Feb. 19	8	8	Romford Ord.	108—118	...
60,000	,,	4	4	Do. 4 p.c. Pref.	85—90	...
44,000	Mch. 18	5	5	Do. 5 p.c. Deb.	97—102	...
25,570	Feb. 12	5½	5½	Rugby 5½ p.c. Pref.	100—110	...
25,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	100—105	...
42,750	De. 11	5½	5½	Do. 5½ p.c. Deb.	105—110	...
110,950	Feb. 26	8	8	Ryde Ord.	100—110	...
270,086	Mch. 18	7	7	Slough Ord.	98—103	...
21,000	Dec. 11	5	5	Do. 5 p.c. Deb.	98—103	+6
28,872	May 13	5½	5½	S. Midland Gas Cpn. Ltd. Ord.	14/—16/–*	...
28,866	Mch. 18	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	14/—16/–	...
127,228	Feb. 19	5	7	Swindon Cons.	75—80	...
60,425	Dec. 18	5	5	Do. 5 p.c. Deb.	95—100	...
64,380	,,	5	5	Torquay & Paignton 5 p.c. Pref.	85—90	...
130,000	Feb. 12	5	5	Wakefield Ord.	85—95	...
81,650	,,	5	5	Do. 5 p.c. max.	75—80	...
82,000	Jan. 29	6	6	Weymouth Ord.	82—87	...
273,626	Feb. 12	7	7	Wolverhampton Cons. Ord. ...	115—120	...
98,384	,,	6	6	Do. 6 p.c. Pref.	105—115	...
160,000	Dec. 18	5½	5½	Do. 5½ p.c. Red. Deb. ...	100—105	...
106,490	Mch. 18	5½	5½	Wrexham Ord	75—85	...
90,000	Dec. 18	5	5	York 5 p.c. Red. Deb.	95—100	...
133,640	Feb. 19	6	6	Yorktown (Cam.) 5 p.c. Cons.	82—87	...
120,000	,,	5	5	Do. 5 p.c. Pref.	85—90	...
35,000	Dec. 18	5½	5½	Do. 5½ p.c. Deb.	105—110	...

BRISTOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations May 17.	Rise or Fall on Week.
347,756	Feb. 1	5	6	Bath Cons.	105—107	...
1,667,250	Feb.	5	5	Bristol, 5 p.c. max.	105—107	...
120,420	Dec.	4	4	Do. 1st 4 p.c. Deb. ...	98—101	...
415,250	,,	4	4	Do. 2nd 4 p.c. Deb. ...	98—101	...
328,790	,,	5	5	Do. 5 p.c. Deb.	115—117	...
274,000	Feb. 26	5	5	Newport (Mon.) Ord.... ...	91—94	...
13,200	Mch. 26	7	8⅜	Pontyp'l Gas & W. 10 p.c. 'A'	11½—12½	...
13,600	,,	5	6	Do. 7 p.c. 'B'	10—11	...
40,000	,,	5	6	Do. 7 p.c. 'C'	10—11	...
140,778	Feb. 12	5	5	Weston-super-Mare Cons. ...	92—96	...
64,338	Dec. 27	4	4	Do. 4 p.c. Deb.	90—95	...
33,340	,,	7½	7½	Do. 7½ p.c. Deb.	140—150	...

LIVERPOOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations May 17.	Rise or Fall on Week.
157,150	Feb. 5	5	6½	Chester 5 p.c. Ord.	98—101	...
92,500	Dec. 18	4	4	Do. 4 p.c. Pref.	84—88	+4
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	85—88	...
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	95—99	...
2,167,410	Feb. 19	6	6	Liverpool 5 p.c. Ord.	109—111	...
245,500	Dec. 18	5	5	Do. 5 p.c. Red Pref. ...	99½—102½	...
306,083	July 17	4	4	Do. 4 p.c. Deb.	99—101	...
106,280	Feb. 5	10	8	Preston 'A' 10 p.c.	160—170	...
188,219	,,	7	7	Do. 'B' 7 p.c.	115—125	...

NEWCASTLE EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations May 17.	Rise or Fall on Week.
122,577	Feb. 19	7	7	Blyth 5 p.c. Ord.	113—118	...
732,000	Feb. 19	4	4	Hartlepool G. & W. Cn. & New	65—67	...
2,430,267	Feb. 5	5	5 7/10	Newcastle & Gateshead Con.	18/9—19/6a	–1/1½
682,856	,,	4	4	Do. 4 p.c. Pref.	91—93	–1
776,706	Dec. 27	3½	3½	Do. 3½ p.c. Deb.	84—86	...
277,285	April 24	5	5	Do. 5 p.c. Deb. '43 ...	100—102	...
332,351	Feb. 5	6	6	Sunderland 6 p.c. max. ...	111—113	...

NOTTINGHAM EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations May 17.	Rise or Fall on Week.
542,270	Feb. 12	6	9	Derby Con.	103—108	...
55,000	Dec. 18	4	4	Do. 4 p.c. Deb.	98—103	...
20,000	Dec. 18	5	5	Long Eaton 5 p.c. Pref. ...	9—11	...
80,000	,,	5	5	Do. 5 p.c. Deb. ...	100—106	...

SHEFFIELD EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations May 17.	Rise or Fall on Week.
10,000	Feb. 19	10	10	Great Grimsby 'A' Ord. ...	170—180	...
6,500	,,	10	10	Do. 'B' Ord. ...	170—180	...
79,000	,,	10	10	Do. 'C' Ord. ...	160—170	...
1,806,339	Feb. 26	6½	6½	Sheffield Cons.	125—127	...
95,000	Jan. 2	4	4	Do. 4 p.c. Deb.	98—100	...

a The quotation is per £1 of Stock.
* Ex. div. ‡ For year.

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